KITTELSON & ASSOCIATES

TRANSPORTATION IMPACT STUDY

Idaho Falls Costco

IDAHO FALLS, ID

May 2019

PREPARED FOR
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Transportation Impact Study

Idaho Falls Costco TIS

Idaho Falls, Idaho

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Project No. 23713

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EXECUTIVE SUMMARY

Costco Wholesale is proposing to develop a 186,804 square-foot Costco warehouse and a fuel station with four islands (24 fueling positions) located on the northwest corner of the Lincoln Road/25th East (Hitt Road) intersection. Additionally, a 1.10-acre outparcel is planned for future development in the southeast corner of the property. The site is currently vacant and consists of 17.77 acres of farmland. The proposed site plan includes one access on Lincoln Road and two accesses on 25th East (Hitt Road), herein referred to as 25th East. The proposed Costco warehouse and fuel station is planned to begin construction in 2019 and open in 2020.

The Transportation Impact Study (TIS) was prepared in accordance with the TIS guidelines set forth by the City of Idaho Falls, Bonneville County, and Bonneville Metropolitan Planning Organization. The analysis was performed in accordance with the methodologies stated in Section 6.3.5 of the BMPO Access Management Plan. The operating standard for both Truck/Auto Priority Streets and Shared Priority Streets is LOS D. All unsignalized intersections that have a projected LOS D or worse shall be evaluated to determine if a signal or roundabout is warranted. The results of this study indicate that the proposed Costco warehouse and fuel station and outparcel can be constructed while maintaining acceptable traffic operations and safety at the study intersections, assuming the recommended mitigations measures are in place.

FINDINGS

Year 2019 Existing Conditions

- The study evaluated three off-site intersections during two time periods: weekday PM and Saturday midday peak hours.
- All study intersections were found to operate at acceptable operations during the weekday PM and Saturday midday peak hours.

Year 2020 Background Traffic Conditions

- Year 2020 background traffic volumes were forecasted using a 2% annual growth rate.
- All study intersections will continue to operate at acceptable operations during the year 2020 background traffic conditions (weekday PM and Saturday midday peak hours).

Proposed Development Plan

- Kittelson maintains a database of traffic data and travel characteristics for Costco Wholesale. This information was used to estimate the trip generation for Costco Wholesale during the weekday PM and Saturday midday peak hours.

- The proposed Costco warehouse and fuel station and outparcel are estimated to generate 7,045 daily net new trips, 707 weekday PM peak hour net new trips, and 988 Saturday midday peak hour net new trips.

- The distribution pattern for site-generated trips was estimated based on Costco Wholesale's prediction of potential members in the area, a review of the proposed access locations and adjacent roadway system, existing traffic patterns, and insights from the City and County staff.

- The proposed development plan includes two access points on 25th East and one access point on Lincoln Road. For initial analysis purposes, these three access points were assumed to be unsignalized, full-movement accesses.

Year 2020 Total Traffic Conditions

- All study intersections will continue to operate at acceptable operations during the year 2020 total traffic conditions (weekday PM and Saturday midday peak hours), except for the following:

  - **Site Access B/25th East** – The critical eastbound left-turn movement is expected to operate at LOS E with a v/c ratio of 0.59 in the weekday PM peak hour and at LOS F with a v/c ratio of 0.88 in the Saturday midday peak hour. Although this intersection is not over capacity, it does not meet BMPO's standard of LOS D. As the main access into the site, three mitigations were analyzed for this intersection:
    - 1) restrict the access to a right-in/right-out/left-in access,
    - 2) signalize the access, and
    - 3) install a multilane roundabout at the access.

    Any of these mitigations are projected to operate acceptably during the weekday PM and Saturday midday peak hours.

    - This intersection meets the Manual on Traffic Control Devices (MUTCD) eight-hour, four-hour, and peak-hour signal warrants based on 2019 daily traffic volumes and estimated site-generated trips for Costco at this proposed access.

Year 2025 Background Traffic Conditions

- Year 2025 background traffic volumes were forecasted using a 2% annual growth.

- All study intersections are projected to operate at acceptable operations during the year 2025 background traffic conditions, except for the following:

  - **14th North/25th East** – The critical westbound movement is expected to operate at LOS E with a v/c ratio of 0.40 in the weekday PM peak hour. The LOS does not meet BMPO's standard of LOS D. However, this critical movement is projected to operate

under capacity and able to utilize the existing two-way, left-turn lane to facilitate the left-turn movement. Given the low volume on 14th North, the under-capacity condition, the presence of a two-way, left-turn lane, and that this intersection does not meet signal warrants, no mitigation is required at this intersection.

Year 2025 Total Traffic Conditions

- All study intersections are projected to operate at acceptable LOS during the year 2025 total traffic conditions, except for the following:
  - **14th North/25th East** – No mitigation is required at this intersection, similar to the findings under year 2025 background traffic conditions.
  - **Site Access B/25th East** – The findings are the same as 2020 total traffic conditions.

Year 2030 Total Traffic Conditions – Costco Only

- All study intersections are projected to operate at acceptable LOS during the year 2030 total traffic conditions, except for the following:
  - **14th North/25th East** – No mitigation is required at this intersection, similar to the findings under year 2025 background and 2025 total traffic conditions.
  - **Site Access A/25th East** – The critical southbound left-turn movement is expected to operate at LOS E with a v/c ratio of 0.49 and LOS E with a v/c ratio of 0.58 in the weekday PM peak hour and Saturday midday peak hour, respectively. The heavy east-west through movement on Lincoln Road creates a higher delay for the southbound left-turns. However, no mitigation is recommended at this site access due to the following: this intersection is projected to be under capacity, there is a two-way, left-turn lane to facilitate southbound left turns, and the other two site accesses provide other options to enter or leave the site. Given these opportunities, no mitigation is required at this site access.
  - **Site Access B/25th East** – The findings are the same as 2020 and 2025 total traffic conditions.

Year 2030 Total Traffic Conditions – With Costco + Teton Commercial Park

- Per the County's request, an analysis scenario was requested that evaluated the traffic conditions with potential trips from the Teton Commercial Park (a 58-acre commercial development to the east of the Costco site). Specific uses within the site have not yet been determined and a transportation impact study has not been completed for the project. **Given the uncertainty of the uses for this development and timeline for the uses to become operational on-site, it is recommended that this analysis scenario and findings presented**

below be used for planning purposes by the County and not for identifying conditions of approval for the proposed Costco warehouse and fuel station and outparcel.

- The Teton Commercial Park is proposed to be developed on the northeast corner of the Lincoln Road/25th East intersection. Access is planned via two access points on 25th East: 1) one access located approximately 660 feet north of Lincoln Road (this access is anticipated to align with Site Access B for Costco and with the proposed site plan would be located approximately 600 feet north of Lincoln Road), 2) second access at approximately 1,700 feet north of Lincoln Road, and 3) one access point on Lincoln Road. A 200,000 square-foot shopping center was assumed for the Teton Commercial Park in the year 2030.
- All study intersections are projected to operate at acceptable LOS during the year 2030 total traffic conditions (Costco + Teton Commercial Park), except for the following:
    - **Woodruff Avenue/Lincoln Road** – This intersection is projected to operate at LOS E with a v/c ratio of 0.98 in the weekday PM peak hour with the traffic from both Costco and the proposed Teton Commercial Park. To mitigate this intersection, an additional northbound through lane (combined with the right-turn lane) is needed to bring the intersection operations to LOS D or better.
    - **Lincoln Road/25th East** – This intersection is projected to operate at LOS F and LOS E in the weekday PM and Saturday midday peak hours, respectively. To mitigate this intersection, a separate northbound right-turn lane is needed to bring the intersection operations to LOS E, and separate northbound left-turn and right-turn lanes are needed to bring the intersection operations to LOS D or better.
    - **Iona Road/25th East** – This intersection is project to operate at LOS F in both the weekday PM and Saturday midday peak hours. To mitigate this intersection, two circulatory northbound and southbound lanes are needed to bring the intersection operations to LOS D or better.
    - **14th North/25th East** – No mitigation is required at this intersection, similar to the findings under year 2025 background and 2025 and 2030 total traffic conditions.
    - **Site Access A/25th East** – The finding is the same as 2030 total traffic conditions with Costco only.
    - **Site Access B/25th East** – The findings are the same as 2020, 2025, and 2030 total traffic conditions, but includes adding the east approach (4th leg) to the intersection to serve the future Teton Commercial Park. The right-in/right-out/left-in access, traffic signal, and multilane roundabout mitigation options provide acceptable traffic operations at Site Access B with the addition of site-generated trips from the future Teton Commercial Park.

On-Site Circulation/Site-Access Operations

- The proposed Costco warehouse and fuel station is estimated to receive 12 to 17 trucks on average per day ranging from local delivery trucks to Depot trucks to gas trucks.
- Sight distance (from field visit) is anticipated to be adequate at all site accesses on 25th East and Lincoln Road.
- **Site Access A/Lincoln Road (full movement)**
    - This driveway is located approximately 600 feet from the Lincoln Road/25th East intersection, which is the farthest possible distance on the site property. The access spacing does not meet BMPO access spacing guidance for a principal arterial. Per the traffic analysis, this access is projected to operate under capacity and at LOS D under year 2020 and 2025 total traffic conditions and LOS E under 2030 total traffic conditions. This access is critical for on-site circulation and for distributing trips between Lincoln Road and 25th East. With the proposed mitigation at Site Access B, it is anticipated that Site Access A will function acceptably as a full-movement, unsignalized driveway.
    - A westbound right-turn lane is warranted at the Site Access A/Lincoln Road intersection per the BMPO's right-turn lane warrants.
    - All 95th percentile queues are accommodated within the proposed storage lengths at Site Access A.
- **Site Access B/25th East (full movement)**
    - This driveway is located approximately 590 feet to the north of the Lincoln Road/25th East intersection. The access spacing does not meet BMPO access spacing guidance for a principal arterial. However, Site Access B functions as a "T" intersection and the location and orientation of the building to make the site function doesn't allow for the access to be moved any further north. Per the traffic analysis, this access is projected to operate under capacity and at LOS E/F under year 2020 and 2025 conditions, and under capacity/over capacity and at LOS F under year 2030 conditions as a full-movement, unsignalized driveway with Costco in place. Therefore, this intersection requires one of the mitigations listed below to bring the access to an acceptable LOS:
        - 1) restrict the access to a right-in/right-out/left-in access,
        - 2) signalize the access, or
        - 3) install a multilane roundabout.
    - If the access is restricted to a right-in/right-out/left-in access or signalized, a southbound right-turn lane is warranted at the Site Access B/25th East per the BMPO's right-turn lane warrants.

- All 95th percentile queues are accommodated within the proposed storage lengths at Site Access B.

- **Site Access C/25th (full movement)**
  - This driveway is located approximately 1,290 feet and 700 feet to the north of the Lincoln Road/25th East intersection and Site Access B/25th East. Per the traffic analysis, this access is projected to operate under capacity and meet LOS standards with Costco in place. This access is critical for on-site circulation to and from 25th East and for truck circulation. Site Access C will function acceptably as a full-movement, unsignalized driveway.
  - A southbound right-turn lane is not warranted at the Site Access C/Lincoln Road per the BMPO's right-turn lane warrants.
  - All 95th percentile queues are accommodated within the proposed storage lengths at Site Access C.

RECOMMENDATIONS

The following list provides a summary of the mitigation measures recommended as part of the proposed Costco warehouse and fuel station:

Off-Site Intersections

- No improvements are recommended at the off-site intersections as part of the Costco warehouse and fuel station development.

Site Access Intersections

- **Site Access A/Lincoln Road** - Construct a full-movement, unsignalized access at Site Access A on Lincoln Road that includes one ingress lane, two egress lanes (southbound left-turn and right-turn lanes), and a westbound right-turn lane.
- **Site Access B/25th East** - Construct a full-movement, unsignalized access at Site Access B on 25th East that includes one ingress lane, two egress lanes (eastbound left-turn and right-turn lanes), and a southbound right-turn lane at the opening of Costco, plan for a future multilane roundabout at this driveway by reserving the space needed for a multilane roundabout design, and participate in a cost-sharing of the roundabout. The multilane roundabout would be installed at a future date when deemed necessary by traffic volumes, traffic operations at this driveway, and development of the property to the east.
- **Site Access C/25th East -** Construct a full-movement, unsignalized access at Site Access C on 25th East that includes one ingress lane and one egress lane (shared westbound left-turn and right-turn lane).
- Maintain adequate sight distance at Site Access A, B, and C by limiting the shrubbery and landscaping.

Section 2
Introduction

INTRODUCTION

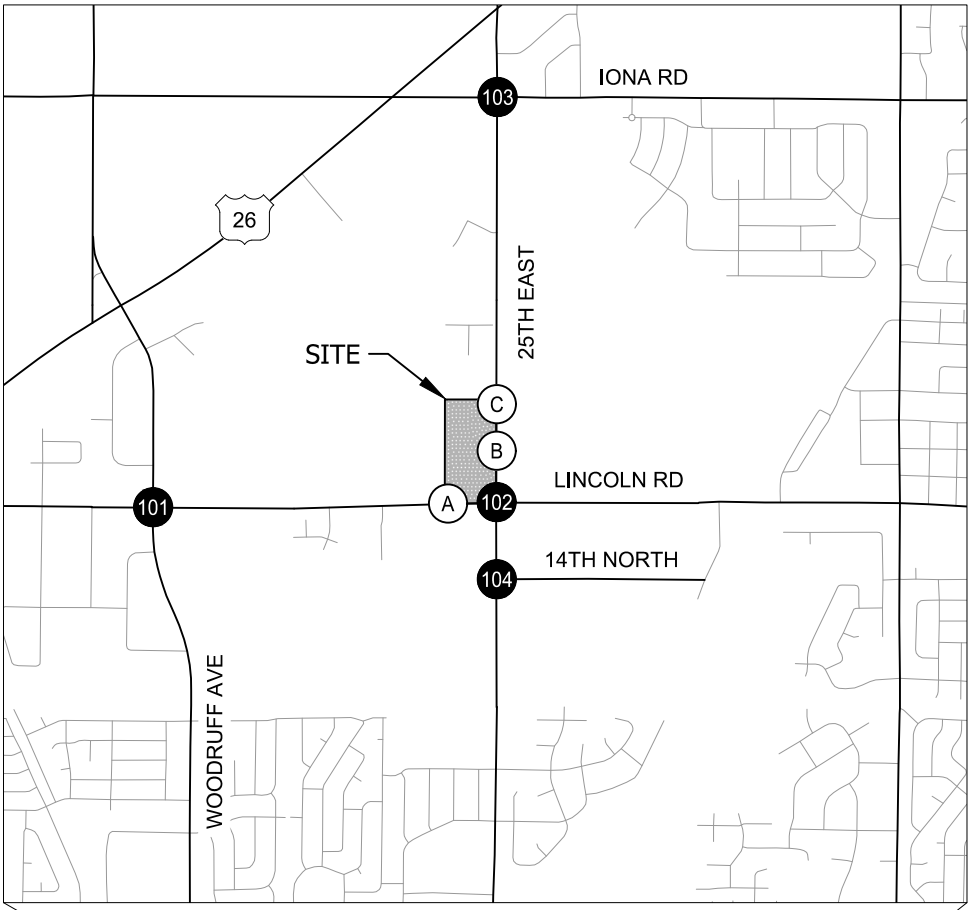
Kittelson & Associates, Inc. (Kittelson) has conducted a Transportation Impact Study (TIS) per the requirements of the Bonneville Metropolitan Planning Organization (BMPO) *Access Management Plan* (Reference 1). The TIS examines the current transportation network and addresses the transportation impacts associated with the proposed Idaho Falls Costco, herein referred to as "proposed development", located in the City of Idaho Falls, Idaho.

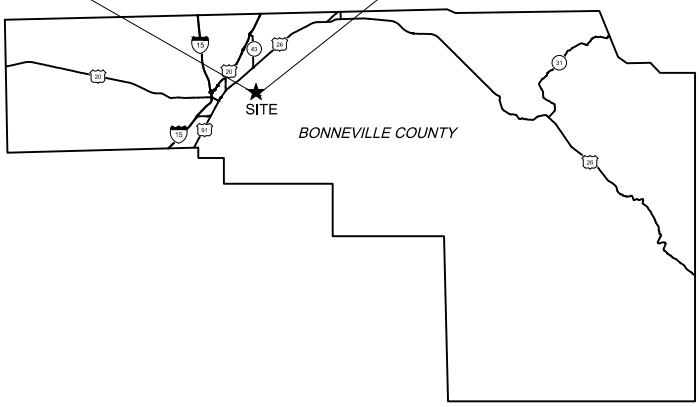
PROJECT DESCRIPTION

The proposed development is located on the northwest corner of Lincoln Road and 25th East intersection. The site is currently vacant, consists of approximately 17.77 acres, and includes one driveway located on Lincoln Road. The proposed development includes a 186,804 square-foot Costco warehouse and a fuel station with four islands (24 fueling positions) on 17.77 acres. It is anticipated that the Costco warehouse and fuel station will open by 2020. The proposed development also includes a 1.10-acre outparcel in the southeast corner of the property that is planned to be developed separately from the Costco warehouse and fuel station in the future. Figure 1 shows the site vicinity map.

Access to the site is proposed via 25th East and Lincoln Road. Figure 2 illustrates the preliminary site plan and location of the following proposed site access points (measured from center to center of intersection):

- **Site Access A:** Unsignalized, full-movement driveway on Lincoln Road approximately 600 feet west of the Lincoln Road/25th East intersection.
- **Site Access B:** Unsignalized, full-movement driveway on 25th East approximately 600 feet north of the Lincoln Road/25th East intersection.
- **Site Access C:** Unsignalized, full-movement driveway on 25th East approximately 1,265 feet north of the Lincoln Road/25th East intersection and approximately 665 feet north of Site Access B.





(##) - Study Intersections
(A) - Site Access Intersections

Site Vicinity Map
Idaho Falls, Idaho

Figure
1

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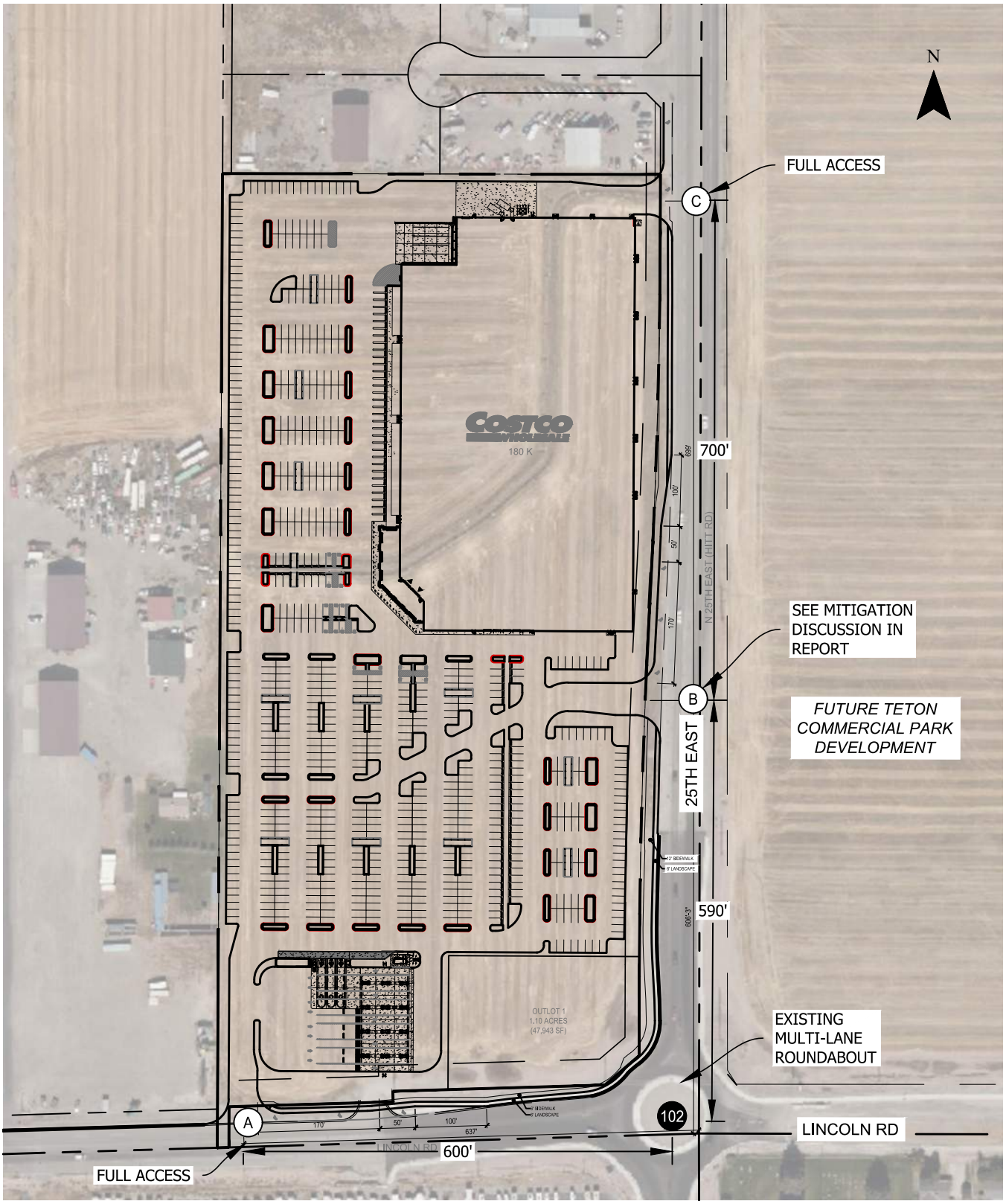

Provided by MG2
Preliminary site plan subject to change
Distances shown are measured center to center

Preliminary Site Plan
Idaho Falls, Idaho

Figure
2

C:\KAI Applications\Autodesk\TEMP\AcPublish_6764\23717 - Idaho Falls Costco.dwg May 15, 2019 - 3:06pm - lnuxoll Layout Tab: 2 siteplan

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SCOPE OF THE REPORT

The scope, methodology, and key assumptions within the TIS were reviewed and agreed upon by the City of Idaho Falls and BMPO in March 2019. *Appendix A includes the Proposed Scope of Work for the Transportation Impact Study memorandum and the emails the City of Idaho Falls and BMPO confirming the scope of work.*

This report evaluates the following transportation issues:

- Existing roadway and transportation system conditions within the site vicinity for a typical weekday PM and Saturday midday peak hours;
- Planned transportation improvements in the site vicinity;
- Annual growth rate of 2% applied to the existing traffic volumes to assist with estimating future year 2020, 2025, and 2030 background traffic volumes during the weekday PM and Saturday midday peak hours;
- Intersection analysis of the year 2020, 2025, and 2030 background traffic conditions during the weekday PM and Saturday midday peak hours;
- Trip generation, distribution, and trip assignment estimates for the proposed Costco warehouse and fuel station and outparcel in years 2020, 2025, and 2030 during the weekday PM and Saturday midday peak hours;
- Intersection analysis of the year 2020, 2025, and 2030 total traffic conditions during the weekday PM and Saturday midday peak hours;
- Planned in-process development (e.g. Teton Commercial Park) in the site vicinity to assist with estimating future year 2030 traffic volumes during the weekday PM and Saturday midday peak hours;
- Intersection analysis of the year 2030 total traffic conditions with Costco and Teton Commercial Park during the weekday PM and Saturday midday peak hours;
- Identified transportation improvement mitigations at the study intersections in years 2020, 2025, 2030 under background and total traffic conditions during the weekday PM and Saturday midday peak hours;
- Analysis of site circulation, traffic signal warrants, left-turn/right-turn lane warrants, and 95th percentile queues at the proposed accesses; and
- Summary of findings and recommendations.

STUDY AREA

The following study intersections were identified and included in this analysis:

Intersections

- Lincoln Road/Woodruff Avenue (signalized)
- Lincoln Road/25th East (roundabout)
- Iona Road/25th East (roundabout)
- 14th North/25th East (two-way stop controlled)
- All site accesses

INTERSECTION PERFORMANCE MEASURES

Intersection performance measures reported in this study include, but are not limited to, level of service (LOS), volume-to-capacity ratio (V/C), delay, and 95th percentile queues.

The performance measures are used to gauge the performance of the transportation system and overall quality of the travel experience through an intersection or roadway segment as it is perceived by the traveler:

- *Level-of-service (LOS)* is currently the most commonly used performance measure. LOS uses an "A" to "F" ranking based on the average control delay experienced by motorists. LOS "A" conditions have very low vehicles delay times (10 seconds or less), while LOS "F" conditions have high delay times (over 80 seconds on average per vehicle at the signalized intersection) that are considered unacceptable to most drivers.
- *Volume-to-capacity (V/C)* compares the volume of traffic to the theoretical capacity of the facility to accommodate traffic. A V/C ratio of 1.0 indicates an intersection is operating at capacity. A V/C ratio over 1.0 indicates the intersection's capacity is exceeded.
- *95th percentile queue* is the queue length that has only a 5% probability of being exceeded during the analysis time period. It is used to help determine turn lane storage, but not what the typical driver would experience. This performance measure is helpful in assessing access spacing from adjacent unsignalized and signalized intersections.

The performance measures are based on the peak 15-minutes of the peak hour and therefore, conditions may be better during other times of the day.

Overall, intersection performance is calculated for signalized and roundabout intersections. Performance measures are only calculated for critical movements at two-way stop-controlled intersections.

TRAFFIC ANALYSIS METHODOLOGY

The intersection operational analysis was performed using the *Highway Capacity Manual (HCM) 6th Edition* analysis procedures (Reference 2). To ensure that this analysis is based on a reasonable worst-case scenario, the peak 15-minute flow rate during all peak hours was used in the evaluation of all intersection LOS and V/C ratios. This analysis reflects conditions that are only likely to occur for 15-minutes out of each average peak hour. The transportation system will likely operate better than the conditions described in this report during all other time periods. The signalized, stop-controlled, and roundabout intersection operations analyses conducted for the TIS were prepared using Vistro 7.

Additionally, the guidance in the *Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition* (Reference 3) was used for signal warrant analyses when determining the appropriate mitigation for an impacted study intersection.

Signal Timing

Idaho City Power provided current signal timing via signal timing sheets for the signalized study intersection. *Appendix B contains all the signal timing sheets.*

Analysis Parameters and Assumptions

Standard values were used for the ideal saturation flow rate (1900 vehicles per hour per lane), while other inputs were gathered from field data including truck percentages, peak hour factors, posted speeds, and storage lengths. As a conservative measure, all analyses assumed a peak hour factor (PHF) from the existing traffic counts at the corresponding study intersection.

Video of the weekday PM peak hour (5:00 – 6:00 PM) was reviewed at the Lincoln Road/Woodruff Avenue intersection to observe the level of right-turn-on-reds (RTOR) for the eastbound and northbound right turns. RTOR adjustment was applied in Vistro for these two movements based on the following field measurements:

- Eastbound right turn: approximately 50% of the eastbound right turn volume completed the movement during the red indication, and
- Northbound right turn: approximately 40% of the northbound right turn volume completed the movement during the red indication.

On Lincoln Road and 25th East, there is an existing center two-way, left-turn lane. Through field visits, it was observed that minor street left-turns at the unsignalized intersections utilize the center two-way, left-turn lane as a refuge to facilitate a two-stage maneuver. The storage length associated with the center two-way, left-turn lane accommodates 1 to 3 vehicles. In our analysis, all unsignalized intersections (14th North and future accesses) were assumed to include storage capacity for 1 vehicle.

PERFORMANCE MEASURES

The BMPO operating standards were used to assess the traffic operations of the study intersections.

BMPO Intersection and Roadway Standards

The analysis was performed in accordance with the methodologies stated in Section 6.3.5 of the BMPO *Access Management Plan*. BMPO requires that all intersections operate at a minimum of LOS D for both Truck/Auto Priority Streets and Shared Priority Streets. All unsignalized intersections that have a projected LOS D or worse shall be evaluated to determine if a signal or roundabout is warranted.

Table 1 summarizes the LOS standards for the study area intersections (signalized and unsignalized).

Table 1. Agency LOS Standards

ID	Study Intersection	Agency	Traffic Control	Travel Mode Context	BMPO Operating Standard
1	Lincoln Road/Woodruff Avenue	BMPO	Signalized	Truck/Auto Priority	LOS D or better
2	Lincoln Road/25th East	BMPO	Roundabout	Shared Priority	LOS D or better
3	Iona Road/25th East	BMPO	Roundabout	Shared Priority	LOS D or better
4	14th North/25th East	BMPO	Two-Way Stop Controlled (TWSC)	Shared Priority	LOS D or better

Section 3
Existing Conditions

EXISTING CONDITIONS

The existing conditions analysis identifies the current site conditions and operational and geometric characteristics of the roadways within the study area. Kittelson staff visited and inventoried the proposed development site and study area in February and March 2019. At that time, Kittelson collected information regarding site conditions, adjacent land uses, and transportation facilities in the study area. In addition, existing traffic counts were collected at the study intersections in March 2019.

SITE CONDITIONS AND ADJACENT LAND USES

The proposed site is located on approximately 17.77 acres in the northwest quadrant of the intersection of Lincoln Road/25th East in Idaho Falls, Idaho. The development property is within the City of Idaho Falls area of impact and carries an HC-1 Limited Business zoning classification (Reference 4). The site is currently vacant and is used for agricultural purposes. The adjacent parcels to the north, south, and west of the site are currently used for commercial purposes. The land adjacent to the site on the east side includes a 58-acre parcel for the in-process Teton Commercial Park development. Specific land uses within Teton Commercial Park have not yet been determined.

TRANSPORTATION FACILITIES

Existing transportation facilities in the site vicinity are summarized in Table 2.

Table 2. Transportation Facilities

Roadway	Functional Classification[1]	Number of Lanes	Posted Speed (mph[2])	Sidewalks	Bicycle Lanes	On-Street Parking
Lincoln Road	Principal Arterial Truck/Auto Priority	4 lanes	40	No	No	No
25th East	Principal Arterial Shared Priority	2-4 lanes[3]	40	No	No	No
Iona Road	Minor Arterial Shared Priority	2 lanes	35/40[4]	No	No	No
14th North	Local Street Other	2 lanes	35	Yes[5]	No	Yes

[1]BMPO 2040 Long-Range Transportation Plan (Reference 5), Figure 2 "Existing Roadway Functional Classifications" and BMPO Travel Context Classification
[2]mph=Miles Per Hour
[3]Roadway narrows to two lanes north of Iona Road
[4]Posted speed is 35 mph west of 25th East and 40 mph east of 25th East
[5]Sidewalks are present along frontage of developed parcels

Pedestrian, Bicycle, and Transit Facilities

There are no sidewalks or bicycle facilities currently provided in the study area, except for the parcel frontage on 14th North.

The Targhee Regional Public Transportation Authority (TRPTA) is a regional public transportation service that provides fixed-route buses within Idaho Falls and other connections between Bonneville, Jefferson, Madison, Teton, and Fremont counties. TRPTA's main bus station is the Aquatic Center in Idaho Falls.

There are no bus routes with stops in the immediate vicinity of the site (i.e. within 0.5-miles walking distance). The nearest bus route is the Yellow Route, which stops near the Lincoln Road/Woodruff Avenue intersection (approximately 0.85 miles from the project site) and near the John Adams Parkway/25th East Intersection (approximately 1.3 miles from the site).

YEAR 2019 EXISTING TRAFFIC CONDITIONS

Turning movement counts at all study intersections were collected in March 2019. The counts were conducted on a typical mid-weekday during the evening peak period (4:00 – 6:00 PM) and the Saturday midday peak period (11:00 AM – 2:00 PM). *Appendix C contains the traffic count worksheets used in this study.* A system peak hour was used for all study intersections due to the close proximity of the intersections and that there are minimal driveways between the intersections.

The peak hours are as follows:

- Weekday PM peak hour - 5:00 PM to 6:00 PM
- Saturday midday peak hour - 1:00 PM to 2:00 PM

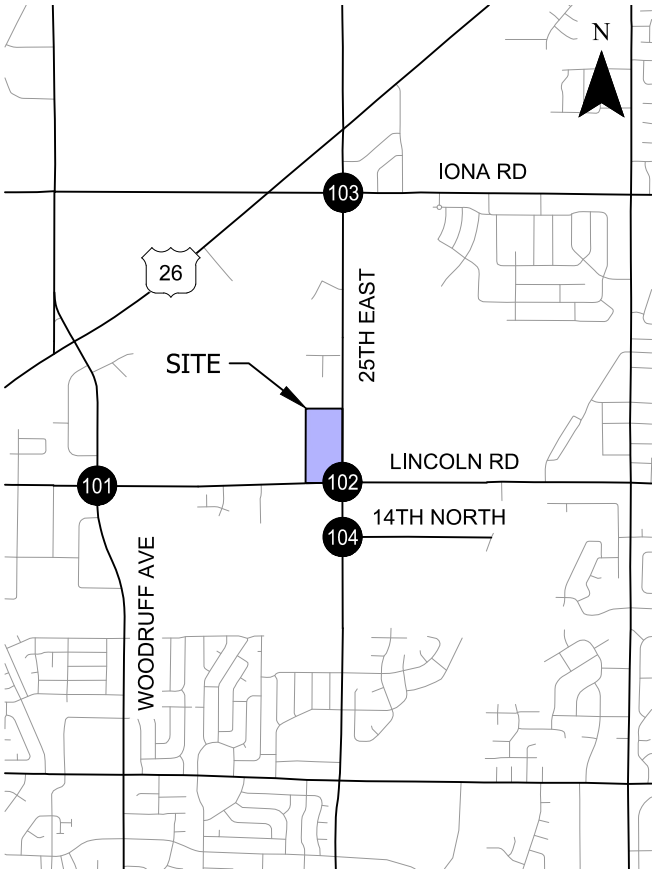
Intersection Levels of Service

An operational analysis was performed at the study intersections for the two time periods. Figure 3 illustrates existing lane configurations, traffic control devices, and year 2019 existing weekday PM and Saturday midday peak hour traffic volumes and intersection or critical movement level-of-service.

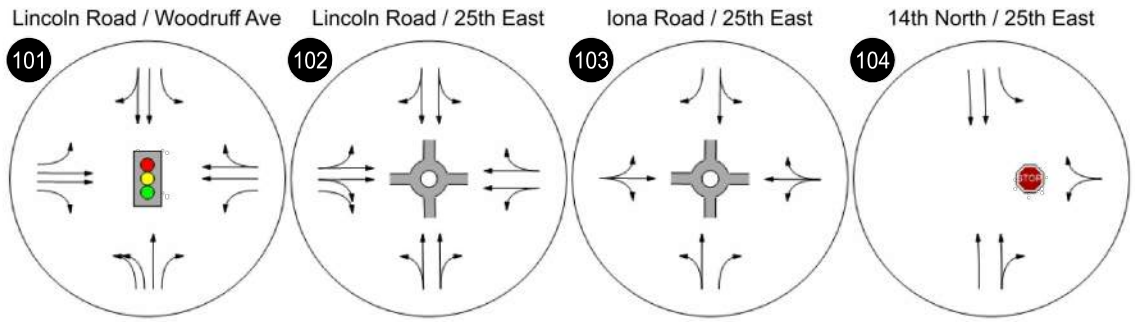
As shown in Figure 3, all study intersections currently operate acceptably within the agency standards at LOS D or better. *Appendix D contains the year 2019 existing conditions Vistro worksheets.*

95th Percentile Queuing Analysis

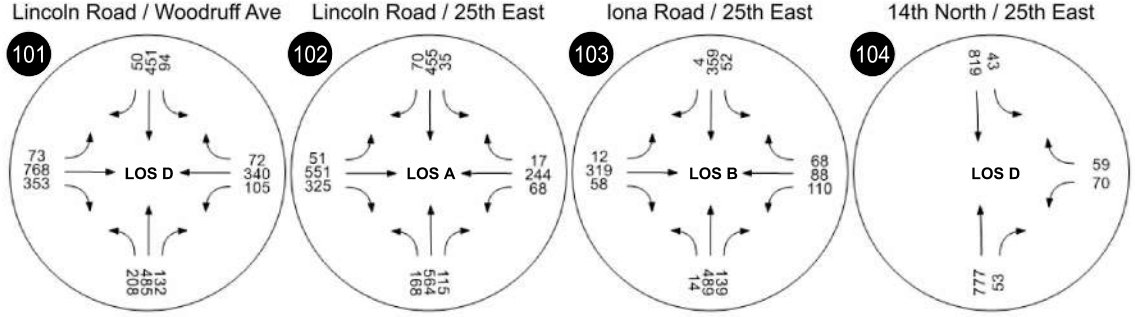
A 95th percentile queuing analysis was completed for the study intersections under weekday PM and Saturday midday peak hours. Queue lengths were reviewed and found to be acceptable. *Queuing worksheets are provided with the analysis worksheets in Appendix D.*



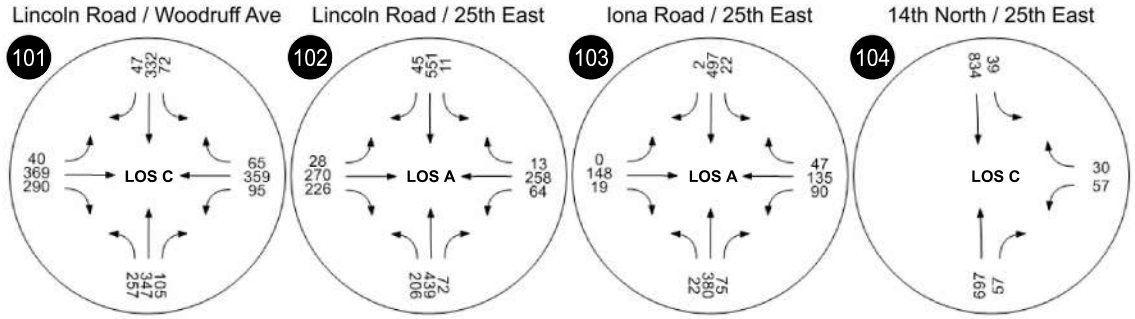
Lane Configurations



Weekday PM Peak Hour



Saturday Midday Peak Hour



- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT

Year 2019 Existing Traffic Conditions
Weekday PM and Saturday Midday Peak Hour
Idaho Falls, Idaho

Figure **3**

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TRAFFIC SAFETY

The crash histories for the study intersections and roadways were reviewed in an effort to identify potential safety issues. Crash records were obtained from ITD for the five-year period from January 1, 2013 to December 31, 2017. Table 3 contains a summary of reported intersection and roadway crashes. *Appendix E provides the crash data summary sheets.*

Table 3. Crash Summary (2013-2017)

Intersection	Crash Type						Crash Severity			Total	Crash Rate[1]
	Rear-End	Angle	Turning	Fixed Object	Side Swipe	Other	PDO	Injury	Fatal		
Lincoln Road/Woodruff Avenue	7	5	5	0	0	0	10	7	0	**17**	**0.30**
Lincoln Road/25th East	9	15	9	2	24	1	53	7	0	**60**	**1.23**
Iona Road/25th East	1	10	5	4	8	2	21	9	0	**30**	**0.96**
14th North/25th East	1	2	5	0	0	0	4	4	0	**8**	**0.24**
Roadway	**Crash Type**						**Crash Severity**			**Total**	**Crash Rate[3]**
	Rear-End	Angle	Turning	Fixed Object	Side Swipe	Other	PDO	Injury	Fatal		
Lincoln Road – Woodruff Avenue to 25th East	11	1	3	0	3	1	16	3	0	**19**	**0.86**
25th East – Lincoln Road to Iona Road	7	2	0	1	1	3	10	4	0	**14**	**0.57**

[1]Crashes Per Million Vehicles

As shown in Table 3, most intersections and roadway segments in the study area currently experience relatively low crash rates, except for the Lincoln Road/25th East and Iona Road/25th East intersections. Sideswipe and angle crashes were the most common crash types at these locations. In 2018, the existing single lane roundabout at the intersection of Lincoln Road/25th East was expanded to a multilane roundabout. Therefore, the crashes reported in Table 3 do not reflect the latest field conditions, so the reported results should not be used to assess the intersections' current safety performance.

Section 4
Transportation Impact Analysis – Year 2020 (Buildout Year)

TRANSPORTATION IMPACT ANALYSIS – YEAR 2020

The transportation impact analysis identifies how the study area's transportation system is anticipated to operate under full build-out of the Costco warehouse and gasoline fuel station, which is planned to be complete in the year 2020. The impact of traffic generated by the proposed Costco during the typical weekday PM and Saturday midday peak hours was examined as follows:

- Existing traffic counts were adjusted using a 2% compound annual growth rate to account for regional growth in the site vicinity.
- Year 2020 background traffic conditions (build-out year of the proposed development without the specific Costco site-generated traffic) were analyzed at the study intersections during the weekday PM and Saturday midday peak hours.
- Trip generation, trip distribution, and trip assignment were estimated for build-out of the proposed Costco.
- Site-generated trips were added to the year 2020 background traffic volumes.
- Year 2020 total traffic conditions (build-out year of the proposed Costco with the specific Costco site-generated traffic included) were analyzed at the study intersections and site accesses during the weekday PM and Saturday midday peak hours.

YEAR 2020 BACKGROUND TRAFFIC CONDITIONS

The year 2020 background conditions traffic analysis identifies how the study area's transportation system will operate without Costco in place. This analysis includes traffic attributed to general background growth (2%) and in-process developments but does not include traffic from the proposed Costco.

Planned Developments and Transportation Improvements

There are no programmed projects in the study area per the BMPO's *2040 Long-Range Transportation Plan* (Reference 5). Therefore, no improvements are assumed in the year 2020 background and total traffic conditions scenarios.

General Background Growth

The year 2020 background traffic volumes reflect existing traffic counts plus one year of annual background growth. Historical average daily traffic counts from the BMPO between the years 1994 and 2013 plus projected average volume increases from the base, 2025, and 2040 model runs from the BMPO regional travel demand model were used to determine the compound growth rate in the area. Through discussions with the City of Idaho Falls and Bonneville County, it was confirmed that a 2% annual growth rate be applied to the existing traffic volumes for all roadways in the study area.

In-Process Developments

Based on discussions with City and Bonneville County staff, no in-process developments were identified in the study area to be accounted for in the year 2020 analysis.

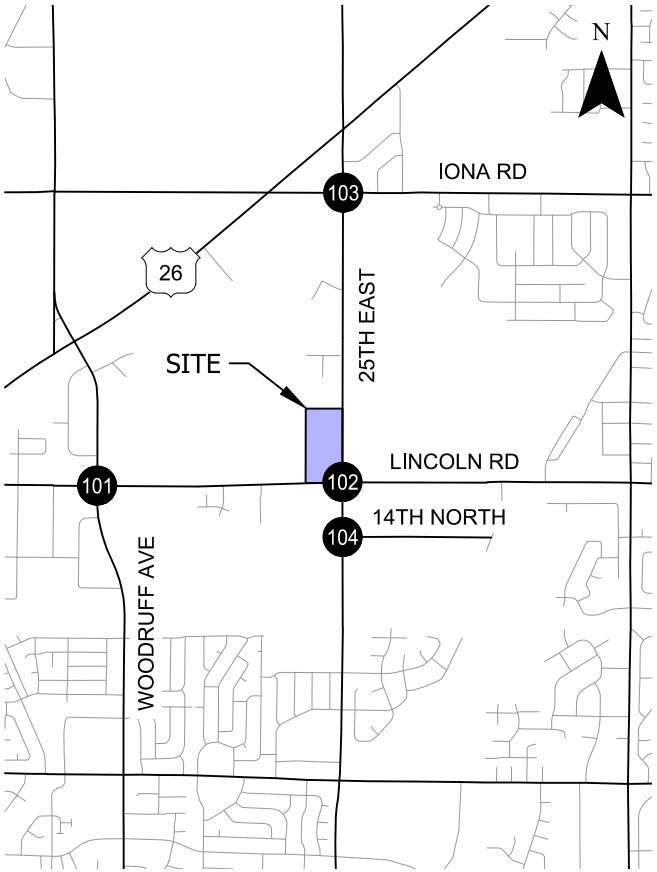
Intersection Level of Service

Year 2020 background traffic volumes, shown in Figure 4 were estimated by applying a 2% annual growth rate to the existing year 2020 traffic volumes and adding the in-process traffic volumes. Year 2020 background traffic conditions were analyzed at the study intersections for the weekday PM and Saturday midday peak hours. Figure 4 summarizes the traffic operations for the year 2020 background traffic conditions.

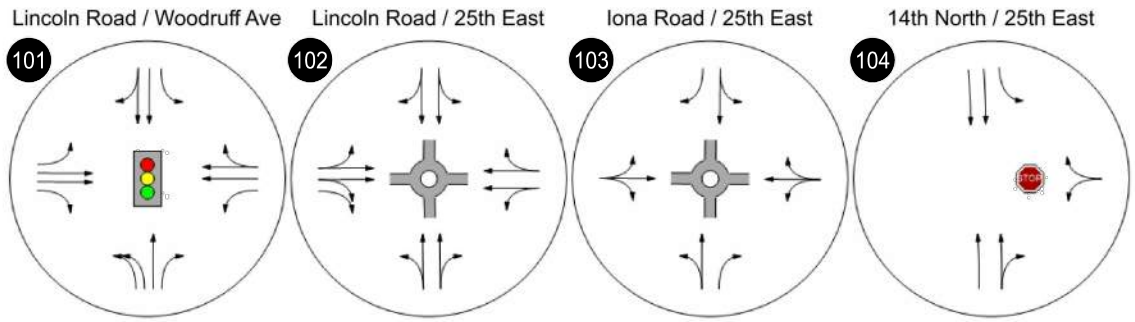
As shown in Figure 4, all study intersections are projected to operate acceptably within the agency's standards. *Appendix F contains the year 2020 background conditions Vistro worksheets.*

95th Percentile Queuing Analysis

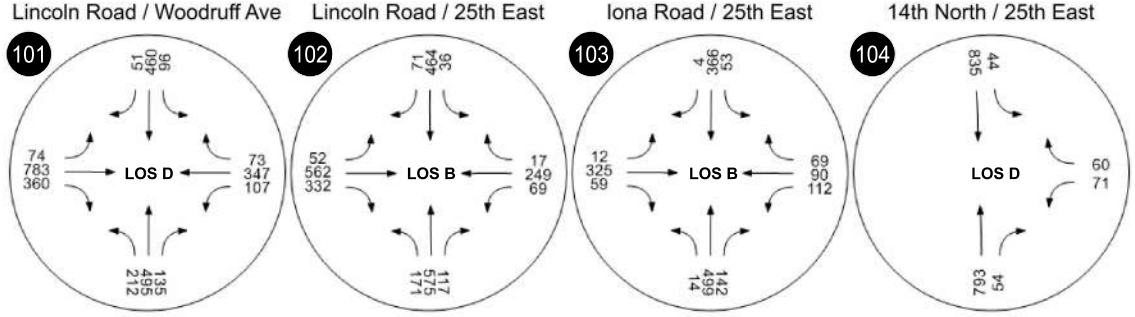
95th percentile queuing results were reviewed for the study intersections under weekday PM and Saturday midday peak hours and were found to be acceptable. *Queuing worksheets are provided with the analysis worksheets in Appendix F.*



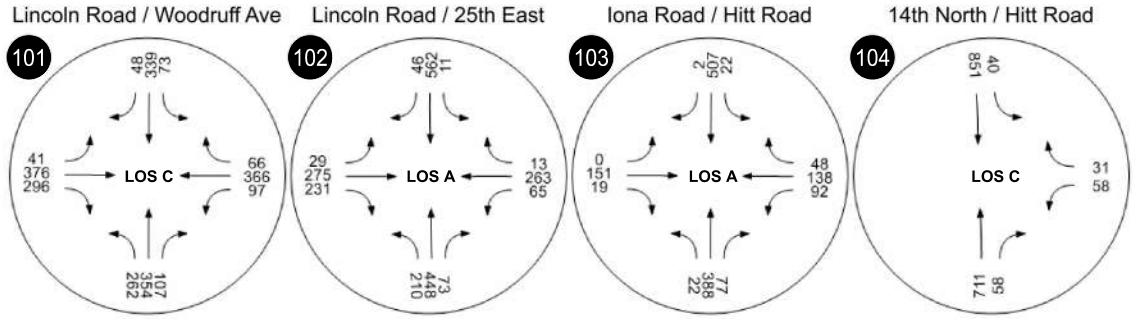
Lane Configurations



Weekday PM Peak Hour



Saturday Midday Peak Hour



- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT

Year 2020 Background Traffic Conditions
Weekday PM and Saturday Midday Peak Hour
Idaho Falls, Idaho

Figure **4**

KITTELSON & ASSOCIATES

PROPOSED DEVELOPMENT PLAN

The proposed development includes a 186,804 square-foot Costco warehouse and a gasoline fuel station with four islands (24 fueling positions) on 17.77 acres. The proposed development also includes a 1.10-acre outparcel in the southeast corner of the property that is planned to be developed separately from the warehouse and fuel station in the future. The development is planned to be complete in 2020. Access is proposed via 25th East and Lincoln Road via three full accesses, as listed below:

- A full access on Lincoln Road located approximately 600 feet west of 25th East at the western property line.
- A full access on 25th East located approximately 590 feet north of Lincoln Road. The Teton Commercial Park project located across 25th East should align one of their future accesses with this proposed access.
- A full access on 25th East located approximately 1,290 feet north of Lincoln Road at the northern property line.

Costco Trip Generation

For the past 20 years, Kittelson has maintained a database of traffic data and travel characteristics for Costco Wholesale. This includes facilities with gas stations and car washes, which are included in the overall trip generation. The database contains transportation information such as trip rates, trip type percentages, and parking demand for Costco locations in the United States, as well as Canada and Mexico. A large portion of the data is from existing Costco sites in the Pacific Northwest. The database is updated and refined each time new Costco traffic counts or information become available to Kittelson. In order to best evaluate the anticipated transportation characteristics of the proposed Costco development, the Costco database information was used in this TIS since it provides use-specific data that most accurately represents the anticipated traffic characteristics of the unique development type.

Costco has invested significant effort into developing this site-specific trip generation database for both their warehouses and their fuel stations because of the unique characteristics of Costco customer travel that exists due to membership requirements and the nature of Costco sales. These unique elements apply to the trip generation and distribution for Costco warehouses, Costco gasoline fuel stations, and the intersection of trips between the two. This database was used to estimate the weekday daily, PM and Saturday midday peak hour vehicle trips for the proposed Costco warehouse and Costco gasoline fuel station.

Additionally, Costco serves trips that can be associated with a pass-by trip, such as: 1) getting a bite to eat (e.g. hot dog, pizza, etc.), 2) stopping for gas, 3) going to the pharmacy, optical, or tire center, 4) completing your weekly/bi-weekly shopping, and 5) visiting for other purposes (e.g. purchasing one or two items that Costco has). These trip purposes can be associated with a pass-by trip of a member stopping at Costco on their way to/from work, combining with their shopping at other locations, or combining with another trip purpose that might occur with them routing on 25th East or Lincoln Road. Within the database, the pass-by trip rates range from 11% to 67% with the average being used for this

TIS. The pass-by trip data was collected at Costco warehouses with fuel stations throughout the U.S. (California, Colorado, Florida, Oregon, Montana, New York, Virginia, and Washington).

The proposed development includes an outparcel for potential future retail space located on the southeast corner of the site. The retail space (size) is not currently defined in the site plan as it would be developed separately in the future. Therefore, it was assumed that the 1.10 acre outparcel could be developed as a 6,000 square-foot retail building(s). The square-footage was developed based on a review of other existing retail corner lots within Idaho Falls. The projected weekday daily, PM, and Saturday midday peak hour vehicle trips for the outparcel were estimated based on the *Trip Generation Manual, 10th Edition* (Reference 6) published by the Institute of Transportation Engineers (ITE). Pass-by trip were estimated using the ITE *Trip Generation Handbook, 3rd Edition* (Reference 7) published by ITE.

Additionally, the proposed development is anticipated to include trips that access the Costco warehouse and fuel station and then go to the retail outparcel. Using the ITE *Trip Generation Handbook, 3rd Edition* and internal trip rates from other Costco sites, a 10% internal trip rate was assumed to occur between the Costco and retail uses. This 10% rate was applied to the total trips associated with the two uses and then split 50/50 between both uses to determine the number of internal trips for each use. Table 4 summarizes the estimated trip generation of the proposed development.

Table 4. Proposed Development Trip Generation Estimate

Land Use	ITE Land Use Code	Size (Square Feet/ Units)	Daily	Weekday PM Peak Hour			Saturday Midday Peak Hour		
				Total	In	Out	Total	In	Out
Costco Warehouse with Fuel Station	NA	186,804[1]	10,944	1,116	547	569	1,470	735	735
Internal Trips (10%)		24 pumps	*(602)*	*(60)*	*(30)*	*(30)*	*(81)*	*(40)*	*(41)*
Net Driveway Trips			10,342	1,056	517	539	1,389	695	694
Pass—by Trips (35% AM/PM, 32% Sat)			*(3,620)*	*(370)*	*(185)*	*(185)*	*(444)*	*(222)*	*(222)*
Net New			**6,772**	**686**	**332**	**354**	**945**	**473**	**472**
Shopping Center	820	6,000	1,091	91	44	47	140	73	67
Internal Trips (10%)			*(602)*	*(60)*	*(30)*	*(30)*	*(81)*	*(40)*	*(41)*
Net Driveway Trips			489	31	14	17	59	33	26
Pass—by Trips (34% AM/PM, 26% Sat)			*(166)*	*(10)*	*(5)*	*(5)*	*(16)*	*(8)*	*(8)*
Net New			**323**	**21**	**9**	**12**	**43**	**25**	**18**
Subtotal Trips			**12,035**	**1,207**	**591**	**616**	**1,610**	**808**	**802**
Total Internalization			*(1,204)*	*(120)*	*(60)*	*(60)*	*(162)*	*(80)*	*(82)*
Total External Trips			**10,831**	**1,087**	**531**	**556**	**1,448**	**728**	**720**
Total Pass-by Trips			*(3,786)*	*(380)*	*(190)*	*(190)*	*(460)*	*(230)*	*(230)*
Total Net New Trips			**7,045**	**707**	**341**	**366**	**988**	**498**	**490**

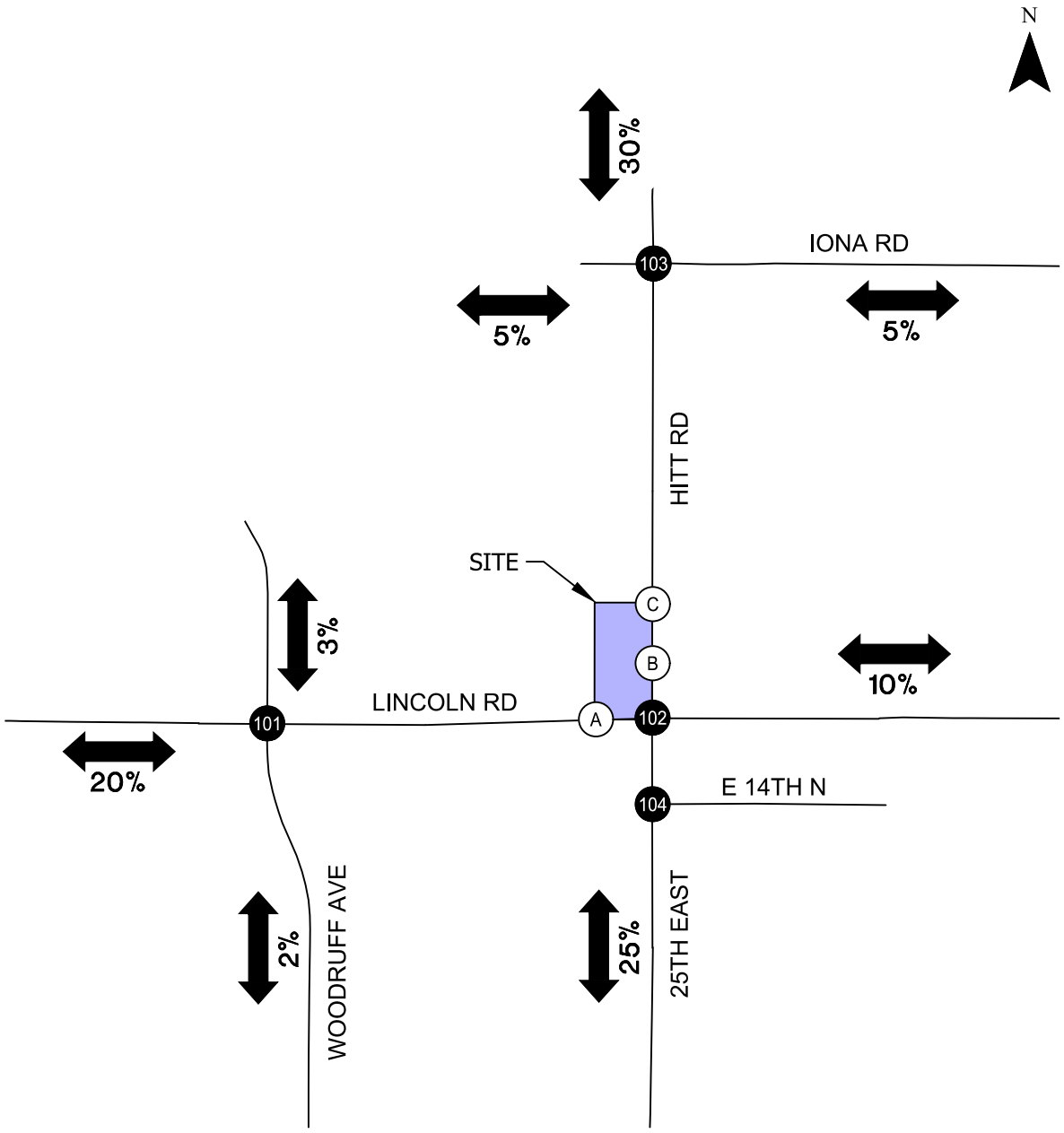
[1] The building size of the Costco warehouse is 186,804 square-feet. A typical Costco warehouse building size is approximately 160,000 square-feet. The additional building square-footage is used for mechanical elements, product handling and storage, additional registers to improve check-out time and member experience, and entry canopy that are not associated with generating additional vehicle trips. Therefore, it is standard practice to base the estimated trip generation on the net warehouse area of 160,000 square feet building.

As shown in Table 4, the proposed Costco development is estimated to generate approximately 7,045 net new daily trips, 707 weekday PM peak hour trips (341 inbound / 366 outbound), and 988 Saturday midday peak hour trips (498 inbound / 490 outbound).

Trip Distribution/Trip Assignment

The distribution of site-generated trips onto the roadway system within the study area was estimated based on Costco Wholesale's predictions of potential members in the area, a review of the proposed access locations and adjacent roadway system, and existing traffic patterns. The proposed distribution is shown in Figure 5.

Figure 6 show the trip assignment for the proposed development for the weekday PM and Saturday midday peak hour.



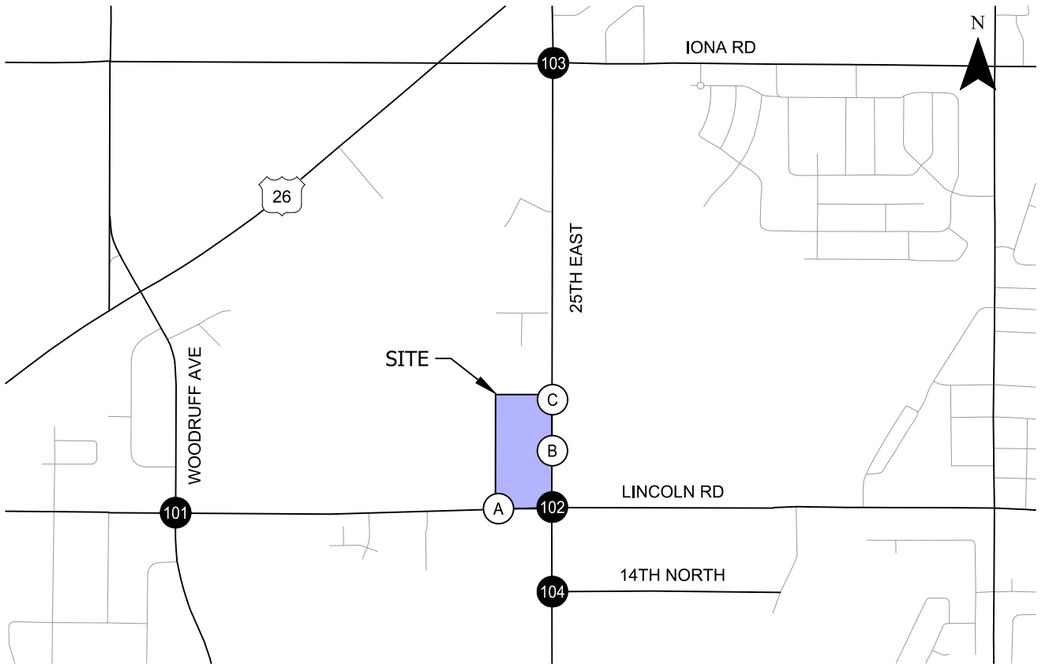
Estimated Trip Distribution
Idaho Falls, Idaho

Figure **5**

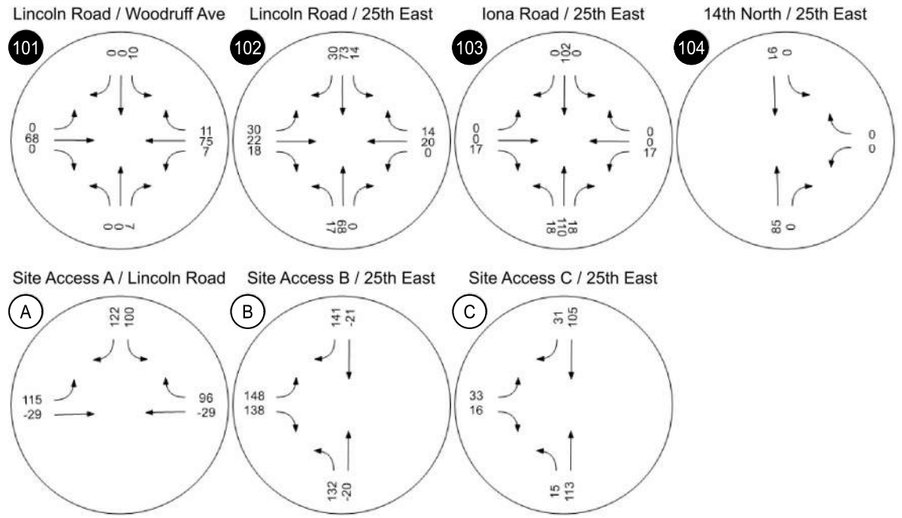
(##) - Study Intersections

(A) - Site Access Intersections

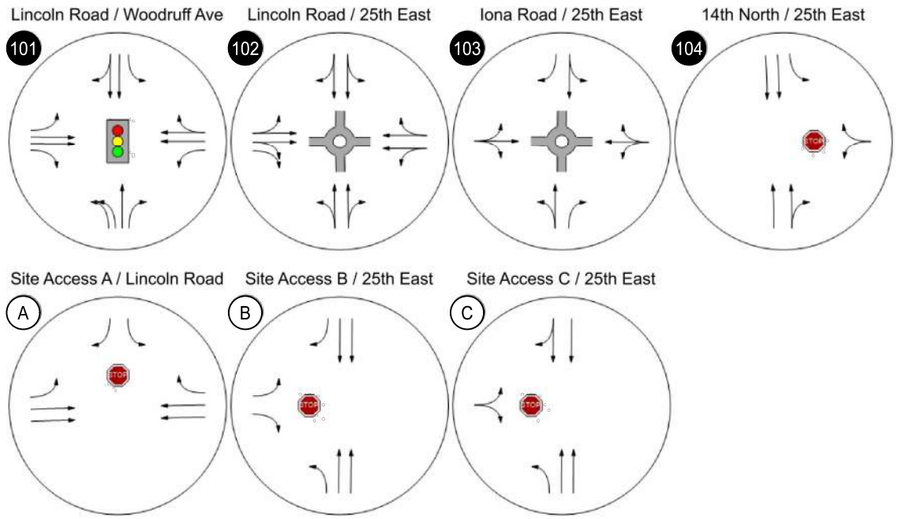
XX% XX - Estimated Trip Distribution Percent



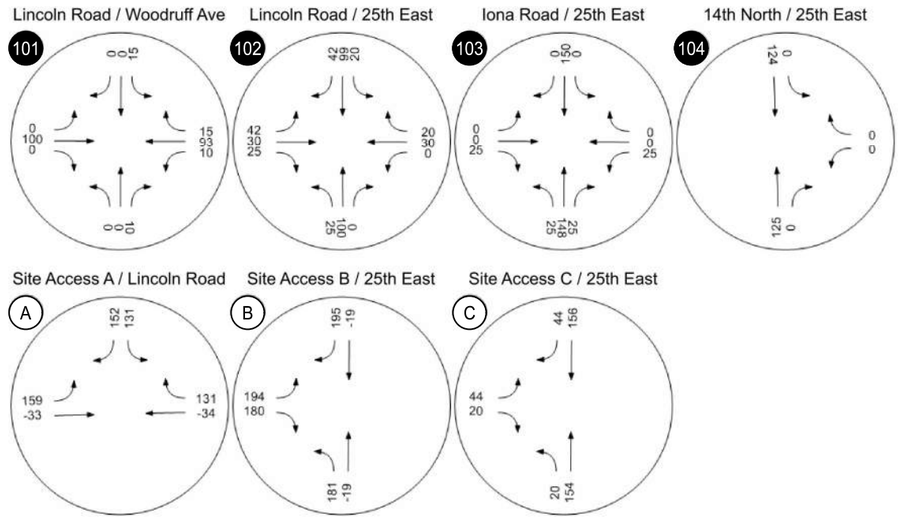
Weekday PM Peak Hour



Lane Configurations



Saturday Midday Peak Hour



- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT

Costco Site Generated Trip Assignment
Weekday PM and Saturday Midday Peak Hour
Idaho Falls, Idaho

Figure **6**

KITTELSON & ASSOCIATES

YEAR 2020 TOTAL TRAFFIC CONDITIONS

The total traffic analysis identifies how the study area's transportation system will operate with the inclusion of traffic generated from the proposed development. The site-generated traffic was added to the year 2020 background traffic volumes to arrive at the weekday PM and Saturday midday peak hour total traffic volumes for the year 2020.

Intersection Level-Of-Service

Figure 7 shows the year 2020 total traffic volumes and detailed operational results for all study intersections during the weekday PM and Saturday midday peak hour. *Appendix G contains the Vistro outputs for the year 2020 total traffic conditions.* As shown in Figure 7, all study intersections are projected to operate acceptably except for the intersection of Site Access B/25th East.

Mitigation

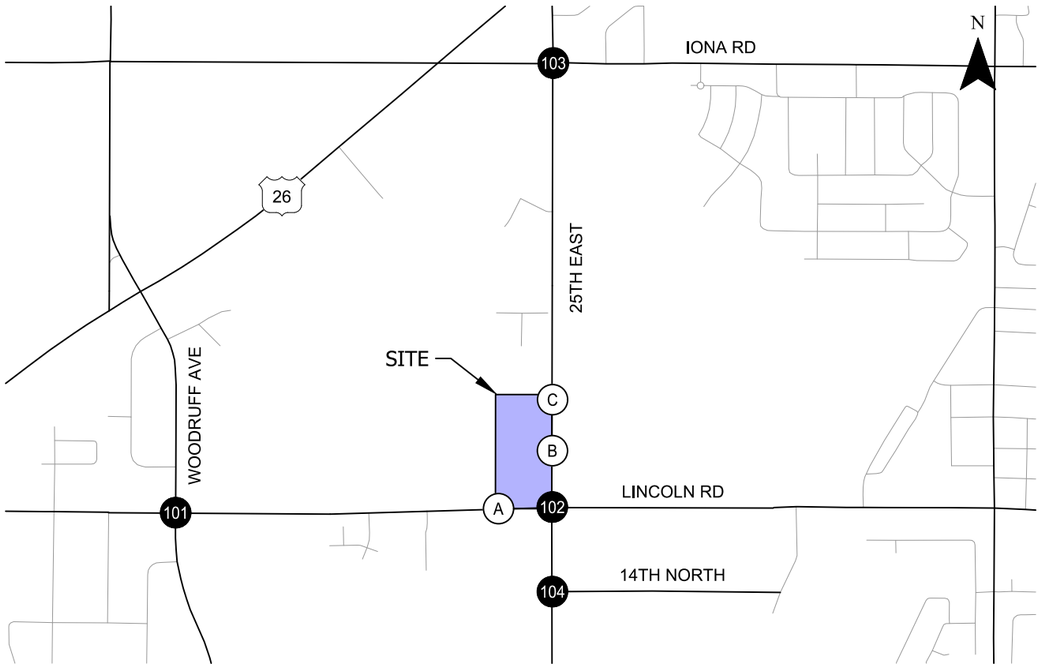
This section outlines the mitigation needed at the intersection falling below the BMPO's traffic operation standards. *Appendix H contains the mitigated traffic operation worksheets for the year 2020 total traffic conditions at the intersection outlined below.*

Site Access B/25th East

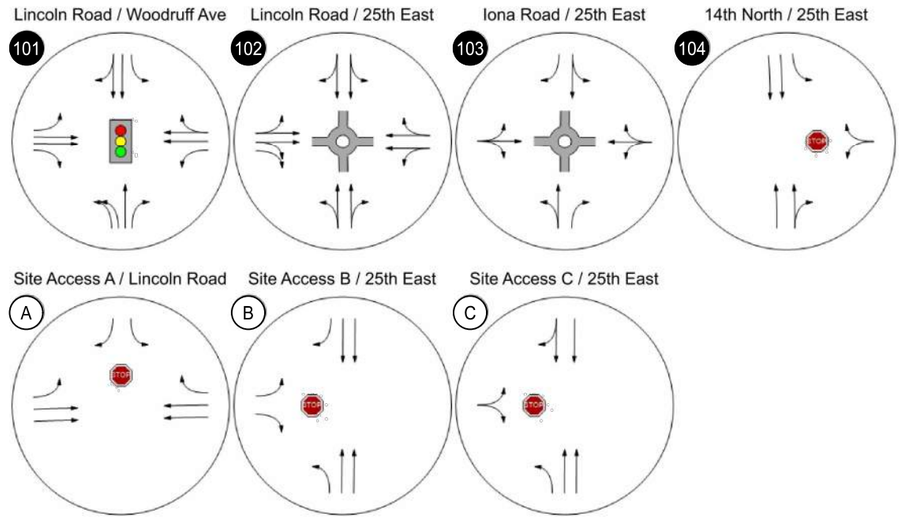
The critical eastbound left-turn movement is expected to operate at LOS E with a v/c ratio of 0.59 in the weekday PM peak hour and at LOS F with a v/c ratio of 0.88 in the Saturday midday peak hour. Although the critical movement is projected to operate under capacity, it does not meet BMPO's standard of LOS D. Therefore, three potential mitigations were analyzed for this intersection: 1) restricting the access to a right-in/right-out/left-in access, 2) signalizing the access, and 3) installing a multilane roundabout at the access.

Right-In/Right-Out/Left-In Access

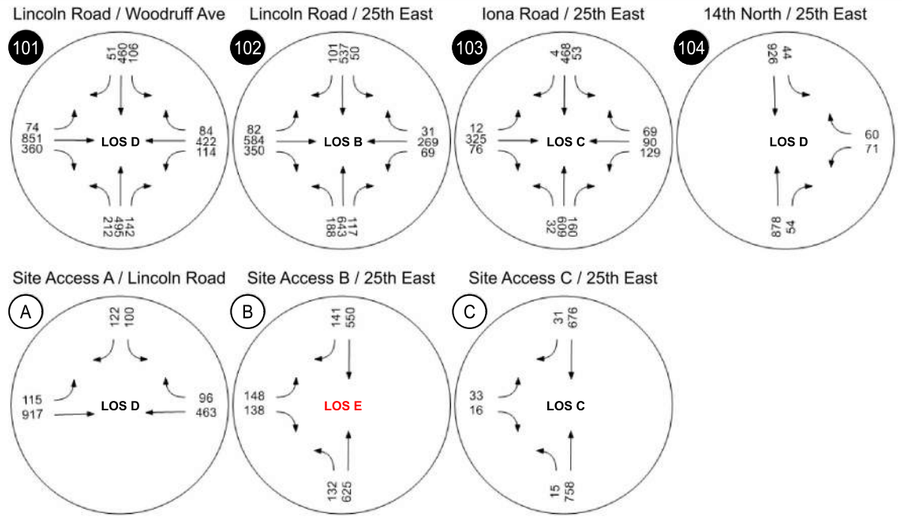
The critical eastbound left-turn movement is removed from the intersection under this mitigation. This movement would reroute to Site Access A, Site Access C, and mostly via right-turns at the Site Access B that travel to the 25th East/Lincoln Road intersection and make a U-turn at the roundabout. Both Site Access A and Site Access C would remain full movement and are anticipated to see a slight increase in the outbound left-turn movement. The delay associated with those movements is greater than proceeding as an eastbound right-turn at Site Access B and making a U-turn at the Lincoln Road/25th East roundabout and vehicles need to travel through the site to reach these two accesses. Based on this assessment, we anticipate more vehicles routing as an eastbound right-turn and making a U-turn at the Lincoln Road/25th East roundabout. The critical eastbound right-turn movement is projected to operate under capacity and at LOS C during the weekday PM and Saturday midday peak hours.



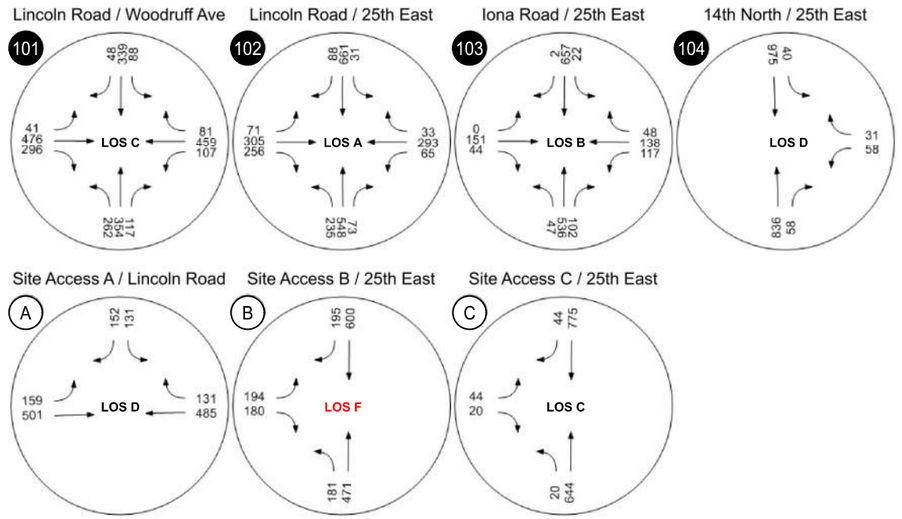
Lane Configurations



Weekday PM Peak Hour



Saturday Midday Peak Hour



- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT

Note: red text represents intersections that do not meet LOS standards.

Year 2020 Total Traffic Conditions
Weekday PM and Saturday Midday Peak Hour
Idaho Falls, Idaho

Figure **7**

KITTELSON & ASSOCIATES

Traffic Signal

Installing a traffic signal at this site access improves operations and provides the ability to connect a 4th leg to the intersection that could serve the future Teton Commercial Park development located to the east of the site. Site Access B is projected to operate at LOS A with a v/c of 0.71 and LOS A with a v/c of 0.75 in the weekday PM peak hour and Saturday peak hour, respectively. A signal warrant analysis for Site Access B was completed based on 24-hour counts for each approach. The counts were used to develop an hourly profile for arrivals throughout each hour of the day. The 100% warrant factor was applied because the posted speed on 25th East is 40 mph. The eight-hour, four-hour, and peak-hour warrants are met for Site Access B during the year 2020 total traffic conditions. *Appendix I contains the signal warrant worksheets.*

Roundabout

Installing a multilane roundabout at this site access improves operations and provides the ability to connect a 4th leg to the intersection that could serve the future Teton Commercial Park development located to the east of the site. Site Access B is projected to operate at LOS A in the weekday PM peak hour and Saturday midday peak hours.

Table 5 summarizes the operations for the site accesses and the Lincoln Road/25th East intersection under all three mitigation scenarios.

Table 5. Year 2020 Mitigated Operational Results at Site Access B/25th East

Intersection	Right-In/Right-Out/Left-In		Traffic Signal		Roundabout	
	LOS	V/C*	LOS	V/C	LOS	V/C*
Year 2020 Weekday PM Peak Hour						
Site Access A/Lincoln Rd	D	0.37 (SBL)	D	0.40 (SBL)	D	0.40 (SBL)
Site Access B/25th East	C	0.50 (EBR)	A	0.71	A	0.37 (EB)
Site Access C/25th East	C	0.17 (EBR)	C	0.12 (EB)	C	0.12 (EB)
Lincoln Rd/25th East	C	0.83 (NB)	B	0.74 (NB)	B	0.74 (NB)
Year 2020 Saturday Midday Peak Hour						
Site Access A/Lincoln Rd	D	0.46 (SBL)	D	0.50 (SBL)	D	0.50 (SBL)
Site Access B/25th East	C	0.59 (EBR)	A	0.75	A	0.51 (EB)
Site Access C/25th East	C	0.25 (EBL)	C	0.17 (EB)	C	0.17 (EB)
Lincoln Rd/25th East	B	0.64 (SB)	A	0.54 (SB)	A	0.54 (SB)

* V/C is of the worst movement if listed in parenthesis

As shown in Table 5, all proposed mitigation options are projected to provide acceptable traffic operations at the site accesses and Lincoln Road/25th East intersection during the weekday PM and Saturday midday peak hour.

95th Percentile Queuing Analysis

Queuing results were reviewed for the study intersections under weekday PM and Saturday midday peak hours and were found to be acceptable. *Queuing worksheets are provided with the analysis worksheets in Appendix G.*

Transportation Impact Analysis – Year 2025 (Buildout Year + 5 Years)

TRANSPORTATION IMPACT ANALYSIS – YEAR 2025

The BMPO *Access Management Plan* (Reference 1) states that when a development generates 500 or more peak hour trips, the study horizon should include an analysis of five and ten years after opening. This section of the transportation impact analysis identifies how the study area's transportation system is anticipated to operate five years after the full build-out of the Costco warehouse and gasoline fuel station in the year 2025. The impact of traffic generated by the proposed Costco during the typical weekday PM and Saturday midday peak hours was examined as follows:

- Existing traffic counts were adjusted using a 2% compound annual growth rate to account for regional growth in the site vicinity.
- Year 2025 background traffic conditions (build-out year of the proposed development without the specific Costco site-generated traffic) were analyzed at the study intersections during the weekday PM and Saturday midday peak hours.
- Trip generation, trip distribution, and trip assignment were estimated for build-out of the proposed Costco.
- Site-generated trips were added to the year 2025 background traffic volumes.
- Year 2025 total traffic conditions (build-out year of the proposed Costco with the specific Costco site-generated traffic included) were analyzed at the study intersections and site accesses during the weekday PM and Saturday midday peak hours.

YEAR 2025 BACKGROUND TRAFFIC CONDITIONS

The year 2025 background conditions traffic analysis identifies how the study area's transportation system will operate without Costco in place. This analysis includes traffic attributed to general background growth (2%) and in-process developments but does not include traffic from the proposed Costco.

Planned Developments and Transportation Improvements

Based on a review of the BMPO's *2040 Long-Range Transportation Plan* (Reference 5), there are no programmed projects in the study area. Therefore, no improvements are assumed in the year 2025 background and total traffic conditions scenarios.

General Background Growth

The year 2025 background traffic volumes reflect existing traffic counts plus six years of annual background growth. The same growth rate of 2% compound annual growth rate be applied to the existing traffic volumes for all roadways in the study area.

In-Process Developments

Based on discussions with City and County staff, no in-process developments were identified in the study area to be accounted for in the year 2025 analysis.

Intersection Level of Service

Year 2025 background traffic volumes, shown in Figure 8 were estimated by applying a 2% annual growth rate to the existing year 2025 traffic volumes. Year 2025 background traffic conditions were analyzed at the study intersections for the weekday PM and Saturday midday peak hours. *Appendix J contains the Vistro outputs for the year 2025 background traffic conditions.*

As shown in Figure 8, all study intersections are projected to operate acceptably except for the intersection of 14th North/25th East.

Mitigation

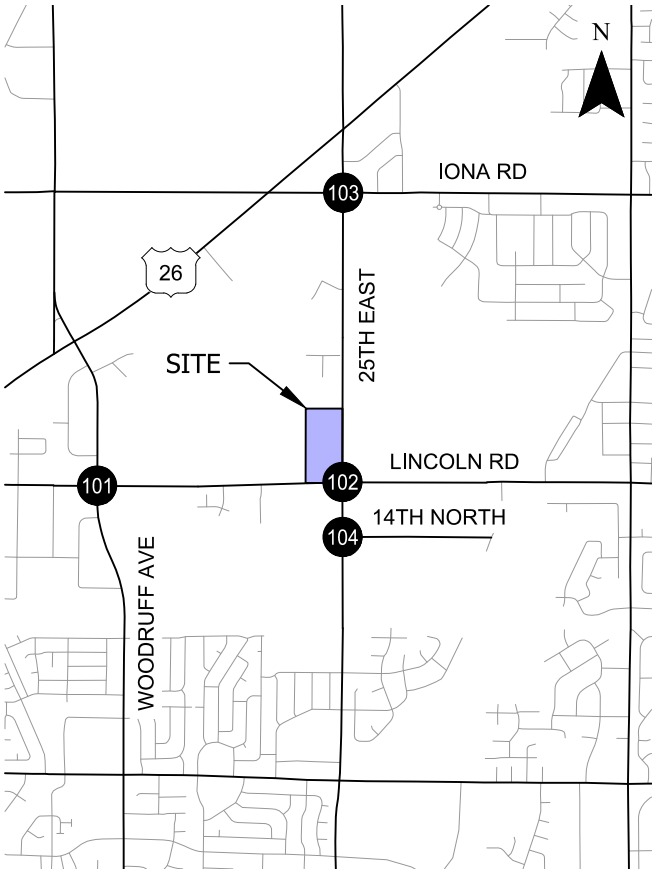
This section outlines the mitigation needed at the intersection falling below the BMPO's traffic operation standards.

14th North/25th East

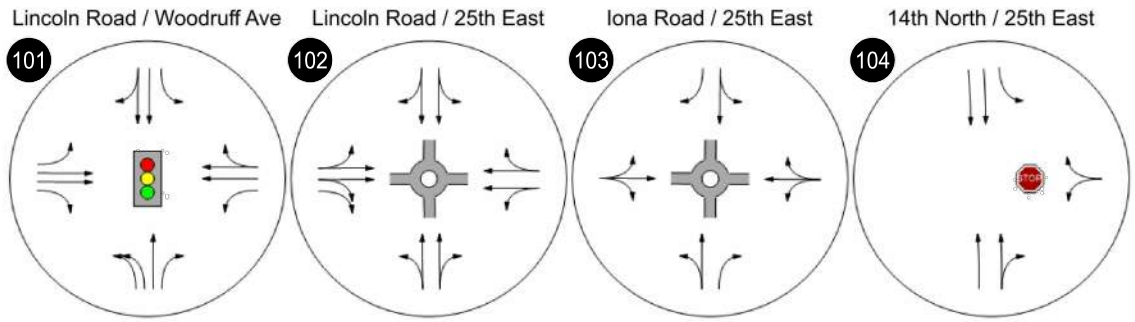
The critical westbound movement is expected to operate at LOS E with a v/c ratio of 0.40 in the weekday PM peak. The LOS does not meet BMPO's standard of LOS D. However, this critical movement is projected to operate under capacity, as well as 25th East roadway includes a center two-way, left-turn lane which provides the ability for vehicles to use as a refuge to complete the left-turn movement. During the weekday PM peak hour, there is a heavy through movement which creates a higher delay for the westbound left-turns. Given the low volume on 14th North and the under-capacity condition for this movement, no mitigation is recommended at this intersection.

95th Percentile Queuing Analysis

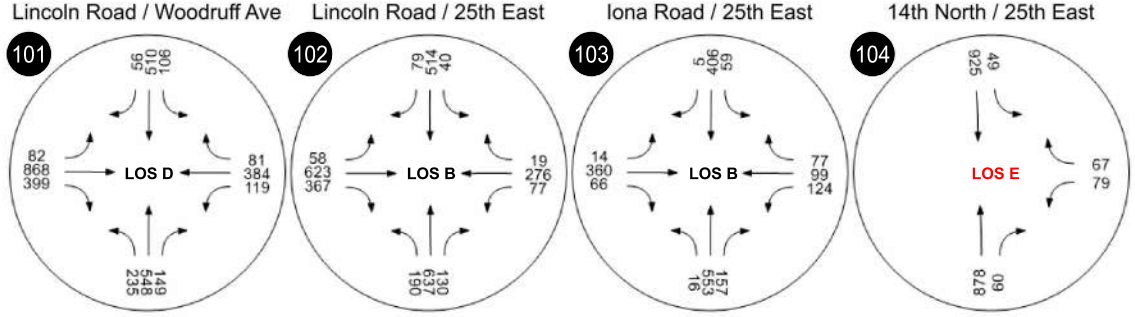
Queuing results were reviewed for the study intersections under weekday PM and Saturday midday peak hours and were found to be acceptable. *Queuing worksheets are provided with the analysis worksheets in Appendix J.*



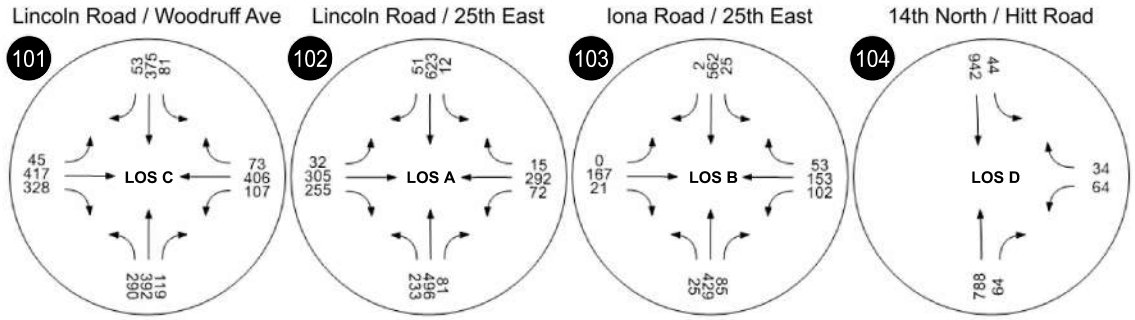
Lane Configurations



Weekday PM Peak Hour



Saturday Midday Peak Hour



- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT

Note: red text represents intersections that do not meet LOS standards.

Year 2025 Background Traffic Conditions
Weekday PM and Saturday Midday Peak Hour
Idaho Falls, Idaho

Figure **8**

KITTELSON & ASSOCIATES

YEAR 2025 TOTAL TRAFFIC CONDITIONS

The total traffic analysis identifies how the study area's transportation system will operate with the inclusion of traffic generated from the proposed development. The site-generated traffic shown in Figure 6 was added to the year 2025 background traffic volumes to arrive at the weekday PM and Saturday midday peak hour total traffic volumes for the year 2025.

Intersection Level-Of-Service

Figure 9 shows the year 2025 total traffic volumes and detailed operational results for all study intersections during the weekday PM and Saturday midday peak hour. *Appendix K contains the Vistro outputs for the year 2025 total traffic conditions.*

As shown in Figure 9, all study intersections are projected to operate acceptably except for the following intersections:

- 14th North/25th East
- Site Access B/25th East

Mitigation

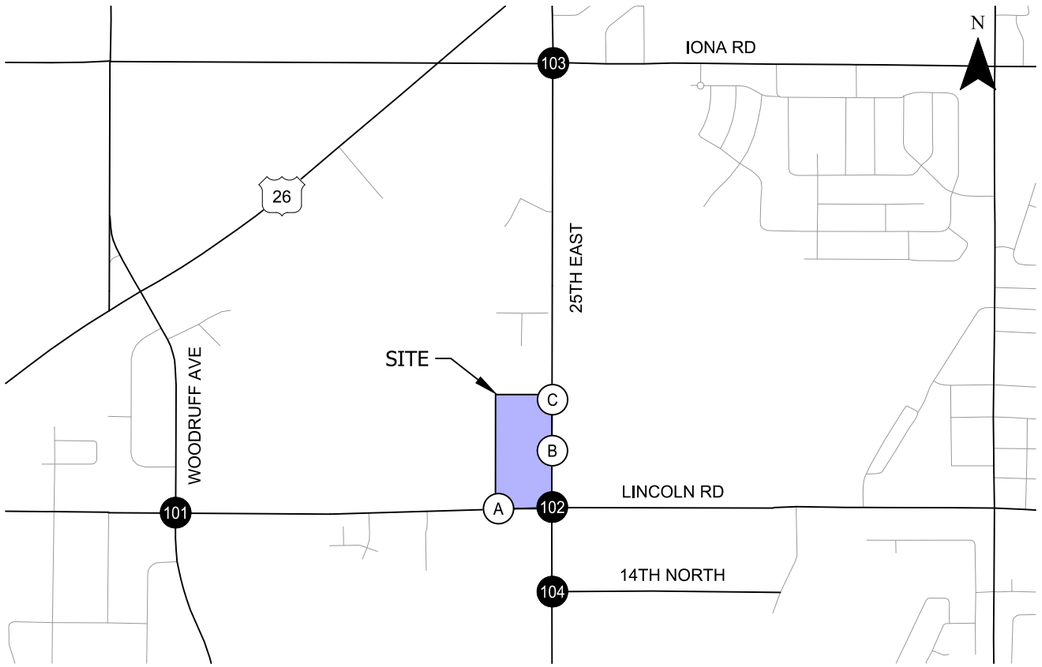
This section outlines the mitigation needed at the intersection falling below the BMPO's traffic operation standards. *Appendix L contains the mitigated traffic operation worksheets for the year 2025 total traffic conditions at the intersections outlined below.*

14th North/25th East

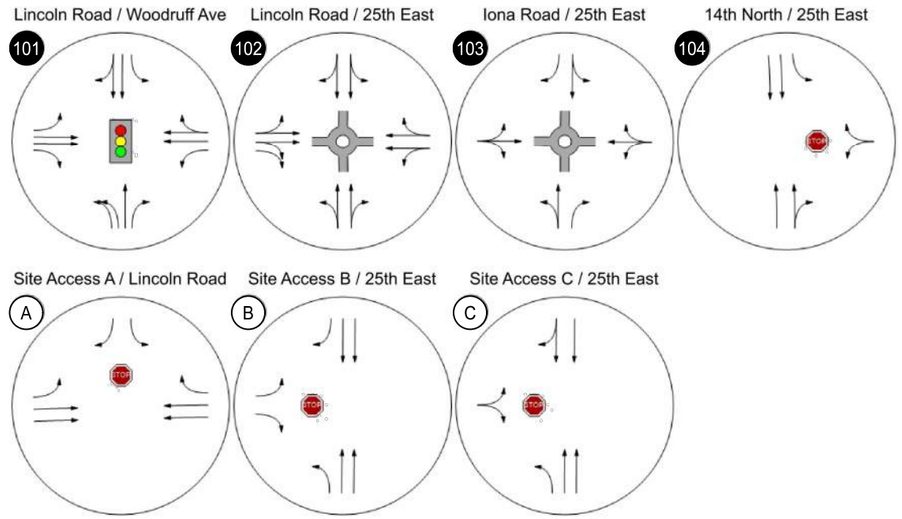
The critical westbound movement is expected to operate at LOS E with a v/c ratio of 0.45 in the weekday PM peak hour. As in the year 2025 background conditions, this intersection is under capacity and two-stage left-turn movements are provided. Therefore, no mitigation is recommended at this intersection.

Site Access B/25th East

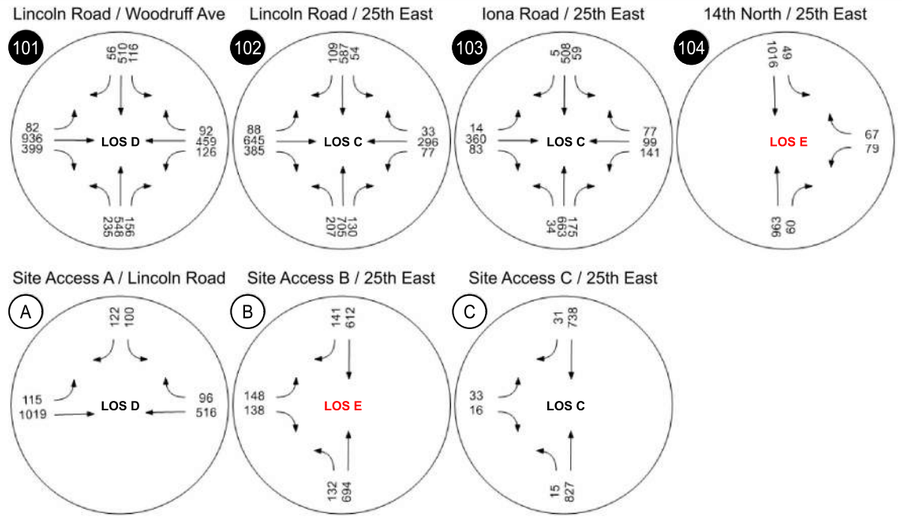
The critical eastbound left-turn movement is expected to operate at LOS E with a v/c ratio of 0.64 in the weekday PM peak hour and at LOS F with a v/c ratio of 0.96 in the Saturday midday peak hour. This intersection is starting to near capacity and does not meet BMPO's standard of LOS D. Therefore, the same three potential mitigations from year 2020 total traffic conditions were analyzed for this intersection: 1) restricting the access to a right-in/right-out/left-in access, 2) signalizing the access, and 3) installing a multilane roundabout at the access.



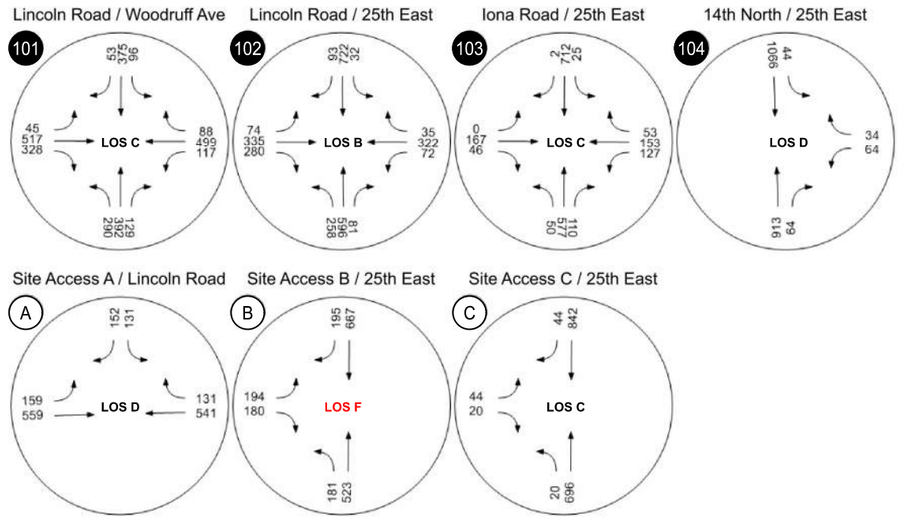
Lane Configurations



Weekday PM Peak Hour



Saturday Midday Peak Hour



- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT

Note: red text represents intersections that do not meet LOS standards.

Year 2025 Total Traffic Conditions
Weekday PM and Saturday Midday Peak Hour
Idaho Falls, Idaho

Figure **9**

KITTELSON & ASSOCIATES

Right-In/Right-Out/Left-In Access

The critical eastbound left-turn movement is removed from the intersection under this mitigation. Similar to year 2020 total traffic conditions, the critical eastbound right-turn movement is projected to operate under capacity and at LOS C during the weekday PM and Saturday midday peak hours.

Traffic Signal

Installing a traffic signal at this site access improves operations and provides the opportunity for a future connection on the east leg to serve the Teton Commercial Park development. Similar to year 2020 total traffic conditions, Site Access B is projected to operate at LOS A in the weekday PM and Saturday midday peak hours.

Roundabout

Another possible mitigation would be to install a multilane roundabout at Site Access B. Similar to year 2020 total traffic conditions, Site Access B is projected to operate at LOS A in the weekday PM and Saturday midday peak hours.

Table 6 summarizes the operations for the site accesses and the Lincoln Road/25th East intersection under all three mitigation scenarios.

Table 6. Year 2025 Mitigated Operational Results at Site Access B/25th East

Intersection	Right-In/Right-Out/Left-In		Traffic Signal		Roundabout	
	LOS	V/C*	LOS	V/C	LOS	V/C*
Year 2025 Weekday PM Peak Hour						
Site Access A/Lincoln Rd	D	0.41 (SBL)	D	0.45 (SBL)	D	0.45 (SBL)
Site Access B/25th East	C	0.53 (EBR)	A	0.72	A	0.40 (NB)
Site Access C/25th East	C	0.18 (EBR)	C	0.13 (EB)	C	0.13 (EB)
Lincoln Rd/25th East	D	0.97 (NB)	C	0.86 (NB)	C	0.86 (NB)
Year 2025 Saturday Midday Peak Hour						
Site Access A/Lincoln Rd	D	0.50 (SBL)	D	0.54 (SBL)	D	0.54 (SBL)
Site Access B/25th East	C	0.62 (EBR)	A	0.76	A	0.54 (EB)
Site Access C/25th East	C	0.27 (EBL)	C	0.19 (EB)	C	0.19 (EB)
Lincoln Rd/25th East	B	0.72 (SB)	B	0.62 (SB)	B	0.62 (SB)

* V/C is of the worst movement if listed in parenthesis

As shown in Table 6, all proposed mitigation options are projected to provide acceptable traffic operations at the site accesses and Lincoln Road/25th East intersection during the weekday PM and Saturday midday peak hour.

95th Percentile Queuing Analysis

Queuing results were reviewed for the study intersections under weekday PM and Saturday midday peak hours and were found to be acceptable. *Queuing worksheets are provided with the analysis worksheets in Appendix K.*

Section 5
Transportation Impact Analysis – Year 2030 (Buildout Year + 10 Years)

TRANSPORTATION IMPACT ANALYSIS – YEAR 2030

The BMPO *Access Management Plan* (Reference 1) states that when a development generates 500 or more peak hour trips, the study horizon should include an analysis of five and ten years after opening. This section of the transportation impact analysis identifies how the study area's transportation system is anticipated to operate as follows:

- Scenario #1 – Analysis of the Costco warehouse and gasoline fuel station in the year 2030, and
- Scenario #2 – Analysis of the Costco warehouse and fuel station and partial development of the Teton Commercial Park, which is planned to be developed on the northeast corner of the Lincoln Road/25th East intersection.

YEAR 2030 TOTAL TRAFFIC CONDITIONS – COSTCO ONLY

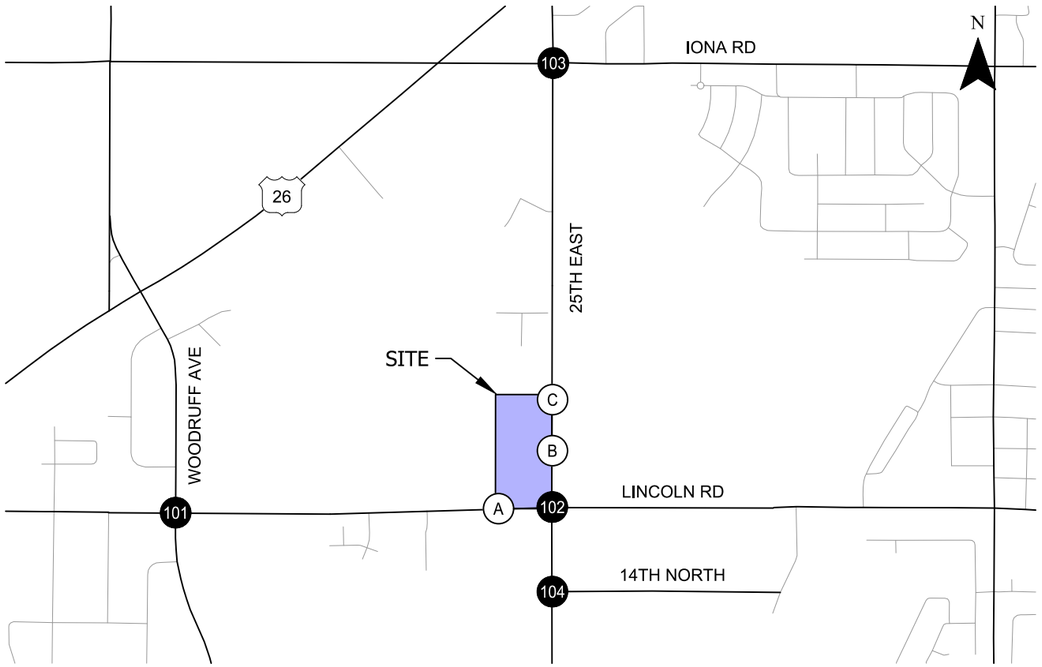
The total traffic analysis identifies how the study area's transportation system will operate with the inclusion of traffic generated from the proposed development. The site-generated traffic was added to the year 2030 background traffic volumes to arrive at the weekday PM and Saturday midday peak hour total traffic volumes for the year 2030.

Intersection Level of Service

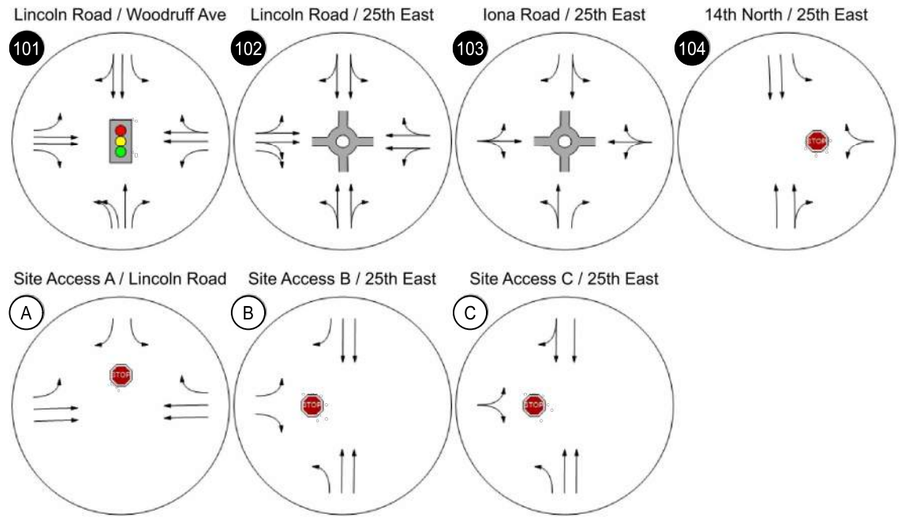
Year 2030 total traffic volumes, as shown in Figure 10, were estimated by applying a 2% annual growth rate to the existing year 2019 traffic volumes and adding in site-generated trips from the proposed Costco warehouse and fuel station. Year 2030 total traffic conditions were analyzed at the study intersections for the weekday PM and Saturday midday peak hours. *Appendix M contains the Vistro outputs for the year 2030 total traffic conditions – Costco Only.*

As shown in Figure 10, all study intersections are projected to operate acceptably according to agency standards, except for the following intersections:

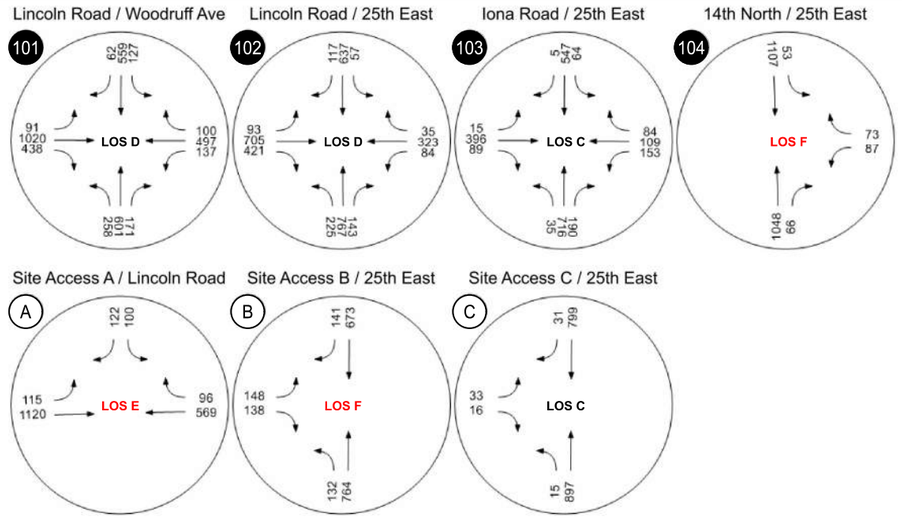
- 14th North/25th East
- Site Access A/Lincoln Road
- Site Access B/25th East



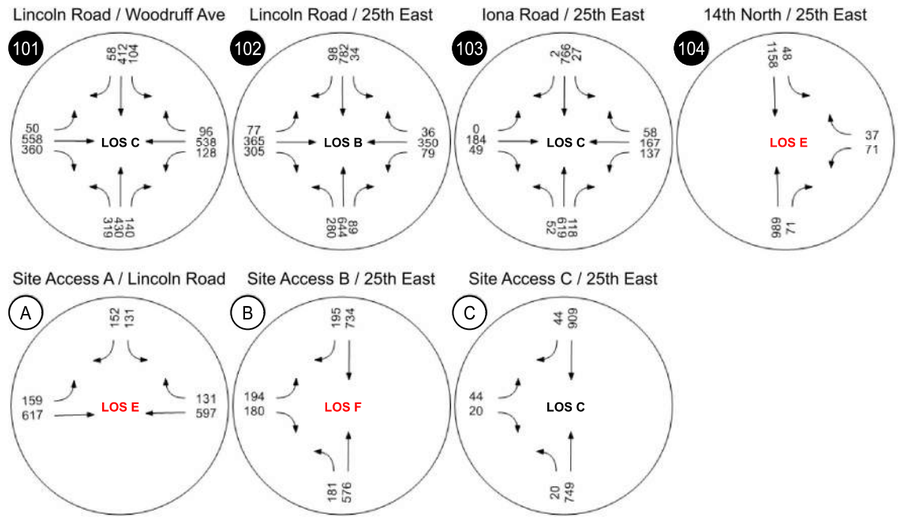
Lane Configurations



Weekday PM Peak Hour



Saturday Midday Peak Hour



- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT

Note: red text represents intersections that do not meet LOS standards.

Year 2030 Total Traffic Conditions - Costco Only
Weekday PM and Saturday Midday Peak Hour
Idaho Falls, Idaho

Figure **10**

KITTELSON & ASSOCIATES

Mitigation

This section outlines the mitigation needed at the intersection falling below the BMPO's traffic operation standards. *Appendix N contains the mitigated traffic operation worksheets for the year 2030 total traffic conditions at the intersections outlined below.*

14th North/25th East

The critical westbound movement is expected to operate at LOS F with a v/c ratio of 0.57 and LOS E with a v/c ratio of 0.39 in the weekday PM peak hour and Saturday midday peak hour, respectively. As in the year 2025 background and total traffic conditions, this intersection is under capacity and two-stage left-turn movements are provided. Therefore, no mitigation is recommended at this intersection.

Site Access A/Lincoln Road

The critical southbound left-turn movement is expected to operate at LOS E with a v/c ratio of 0.49 and LOS E with a v/c ratio of 0.58 in the weekday PM peak hour and Saturday midday peak hour, respectively. The heavy east-west through movement on Lincoln Road creates a higher delay for the southbound left-turns. However, this intersection is under capacity, two-stage left-turn movements are provided, and there are two other site accesses to enter or leave the site. Additionally, Site Access B is planned to include some level of mitigation that will benefit the operations at this location. Given these opportunities and conditions, no mitigation is recommended at this site access.

Site Access B/25th East

The critical eastbound left-turn movement is expected to operate at LOS F with a v/c ratio of 0.70 and LOS F with a v/c ratio over 1.00 in the weekday PM peak hour and Saturday midday peak hour, respectively. Therefore, the same three potential mitigations from year 2020 and 2025 total traffic conditions were analyzed for this intersection: 1) restricting the access to a right-in/right-out/left-in access, 2) signalizing the access, and 3) installing a multilane roundabout at the access.

Right-In/Right-Out/Left-In Access

The critical eastbound left-turn movement is removed from the intersection under this mitigation. Similar to year 2020 and 2025 total traffic conditions, the critical eastbound right-turn movement is projected to operate under capacity and at LOS C during the weekday PM and Saturday midday peak hours with this mitigation.

Traffic Signal

Installing a traffic signal at this site access improves operations and provides the opportunity for a future connection on the east leg to serve the Teton Commercial Park development. Similar to year 2020 and 2025 total traffic conditions, Site Access B is projected to operate at LOS A in the weekday PM and Saturday midday peak hours with this mitigation.

Roundabout

Similar to year 2020 and 2025 total traffic conditions, Site Access B is projected to operate at LOS A in the weekday PM and Saturday midday peak hours with this mitigation.

Table 7 summarizes the operations for the site accesses and the Lincoln Road/25th East intersection under all three mitigation scenarios.

Table 7. Year 2030 Mitigated Operational Results at Site Access B/25th East

Intersection	Right-In/Right-Out/Left-In		Traffic Signal		Roundabout	
	LOS	V/C*	LOS	V/C	LOS	V/C*
Year 2030 Weekday PM Peak Hour						
Site Access A/Lincoln Rd	D	0.45 (SBL)	E	0.49 (SBL)	E	0.49 (SBL)
Site Access B/25th East	C	0.56 (EBR)	A	0.73	A	0.43 (NB)
Site Access C/25th East	C	0.20 (EBL)	C	0.14 (EB)	C	0.14 (EB)
Lincoln Rd/25th East	E	1.13 (NB)	D	1.00 (NB)	D	1.00 (NB)
Year 2030 Saturday Midday Peak Hour						
Site Access A/Lincoln Rd	E	0.54 (SBL)	E	0.58 (SBL)	E	0.58 (SBL)
Site Access B/25th East	C	0.66 (EBR)	A	0.78	A	0.57 (EB)
Site Access C/25th East	D	0.30 (EBL)	C	0.21 (EB)	C	0.21 (EB)
Lincoln Rd/25th East	C	0.81 (SB)	B	0.71 (SB)	B	0.71 (SB)

* V/C is of the worst movement if listed in parenthesis

As shown in Table 7, all proposed mitigation options are projected to provide acceptable traffic operations at the Site Access B during the weekday PM and Saturday midday peak hours.

95th Percentile Queuing Analysis

Queuing results were reviewed for the study intersections under weekday PM and Saturday midday peak hours and were found to be acceptable. *Queuing worksheets are provided with the analysis worksheets in Appendix M.*

YEAR 2030 TOTAL TRAFFIC CONDITIONS – COSTCO + TETON COMMERCIAL PARK

The total traffic analysis identifies how the study area's transportation system will operate with the inclusion of traffic generated from the Costco warehouse and gasoline fuel station and the Teton Commercial Park. Per the County's request, an analysis scenario was requested that evaluated the traffic conditions with potential trips from the Teton Commercial Park. Specific uses within the site have not yet been determined and a transportation impact study has not been completed for the project. **Given the uncertainty of the uses for the Teton Commercial Park development and timeline for the uses to become operational on-site, it is recommended that this analysis scenario be used for planning purposes by the County, but not for identifying conditions of approval for the proposed Costco warehouse and fuel station and outparcel.**

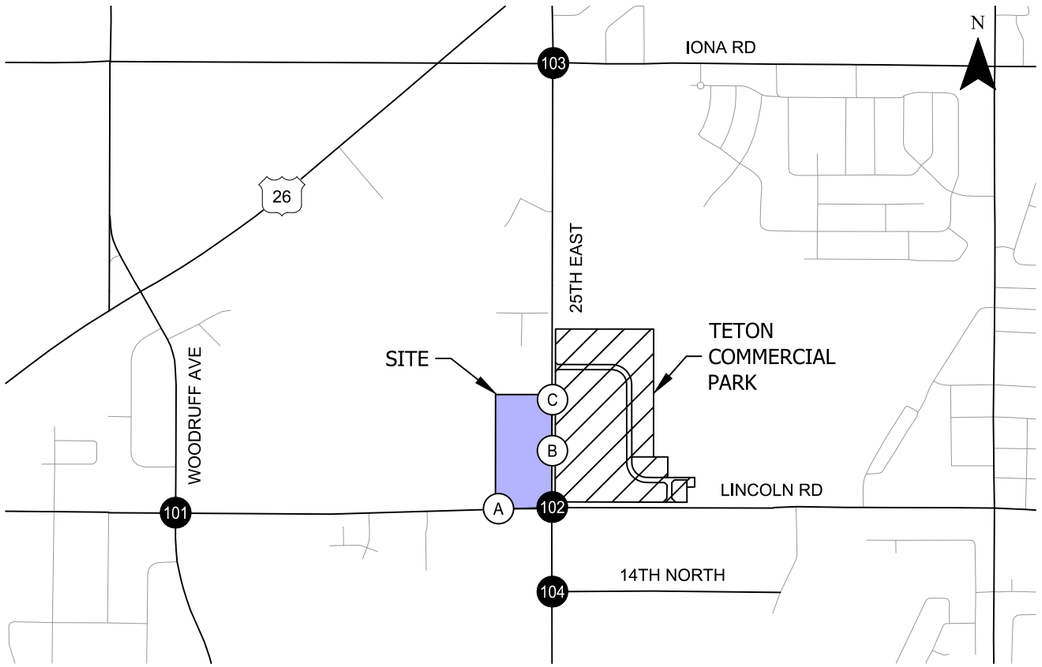
Teton Commercial Park

The Teton Commercial Park is a planned 58-acre commercial development located in the northeast quadrant of the 25th East/Lincoln Road intersection. The plat for this development shows one access on 25th East approximately 1,700 feet north of Lincoln Road and a second access on Lincoln Road approximately 1,400 feet east of 25th East. There is potential for an additional future access located approximately 660 feet north of Lincoln Road on 25th East, which could align and connect as the east leg of the Costco Site Access B/25th East intersection (located approximately 590 feet north of Lincoln Road). As noted above, no specific uses have been identified for the site. Therefore, a 200,000 square foot shopping center was assumed for the development in the year 2030. These trips were routed with a similar trip distribution as Costco. *Appendix O contains the trip generation and trip assignment worksheets for the Teton Commercial Park.*

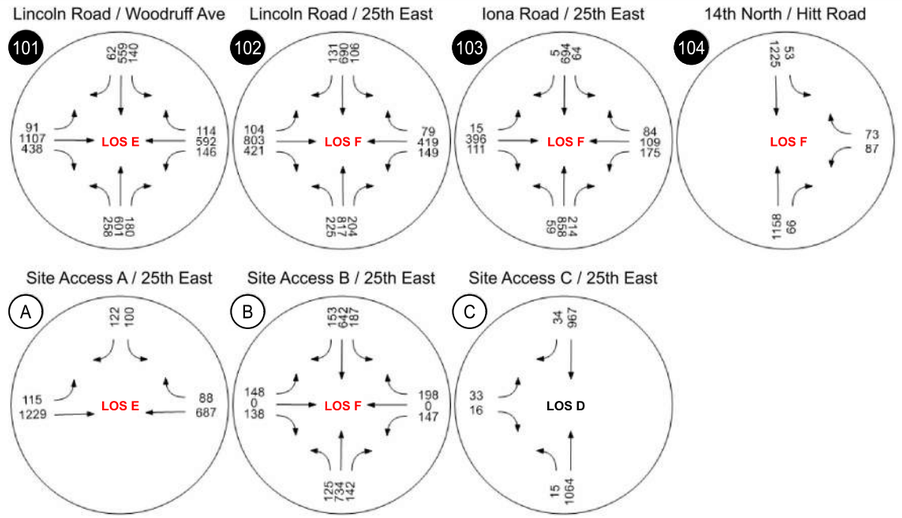
Intersection Level-Of-Service

Year 2030 total traffic volumes were estimated by applying a 2% annual growth rate to the existing year 2019 traffic volumes and adding in site trips from the proposed Costco warehouse and gasoline fuel station and Teton Commercial Park. Year 2030 total traffic conditions were analyzed at the study intersections for the weekday PM and Saturday midday peak hours. Figure 11 show the year 2030 total traffic volumes for the weekday PM and Saturday midday peak hour. *Appendix P contains the Vistro outputs for the year 2030 total traffic conditions with Costco + Teton Commercial Park.*

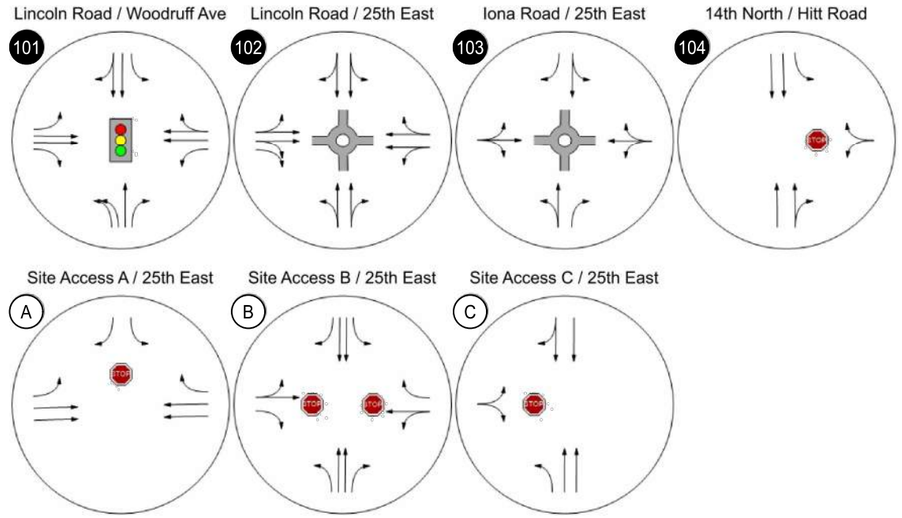
As shown in Figure 11, the Site Access C/25th East intersection is the only intersection that is projected to operate acceptably per agency standards.



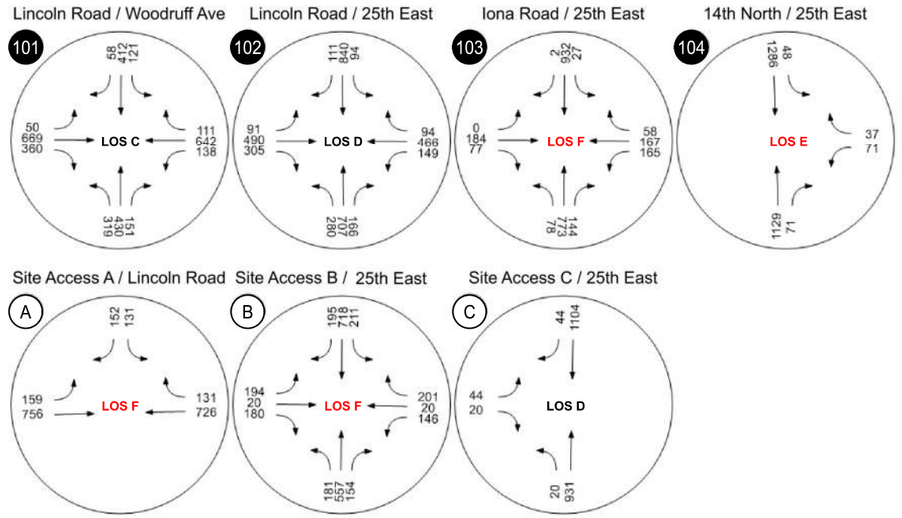
Weekday PM Peak Hour



Lane Configurations



Saturday Midday Peak Hour



- STOP SIGN
- TRAFFIC SIGNAL
- ROUNDABOUT

Note: red text represents intersections that do not meet LOS standards.

Year 2030 Total Traffic Conditions - Costco + Teton Commercial Park
Weekday PM and Saturday Midday Peak Hour
Idaho Falls, Idaho

Figure **11**

KITTELSON & ASSOCIATES

Mitigation

This section outlines the mitigation needed at the intersection falling below the BMPO's traffic operation standards. *Appendix Q contains the mitigated traffic operation worksheets for the year 2030 total traffic conditions at the intersection outlined below.*

Lincoln Road/Woodruff Avenue

This intersection is projected to operate at LOS E with a v/c ratio of 0.98 in the weekday PM peak hour with the traffic from both Costco and the proposed Teton Commercial Park. To mitigate this intersection, an additional northbound through lane (combined with the right-turn lane) is needed to bring the intersection operations to LOS D or better.

Lincoln Road/25th East

This intersection is projected to operate at LOS F and LOS E in the weekday PM and Saturday midday peak hours, respectively. To mitigate this intersection, a separate northbound right-turn lane is needed to bring the intersection operations to LOS E, and separate northbound left-turn and right-turn lanes are needed to bring the intersection operations to LOS D or better.

Iona Road/25th East

This intersection is projected to operate at LOS F in both the weekday PM peak hour and Saturday midday peak hour. To mitigate this intersection, two circulatory northbound and southbound lanes are needed to bring the intersection operations to LOS D or better.

14th North/25th East

The critical westbound movement is expected to operate at LOS F with a v/c ratio of 0.65 and LOS E with a v/c ratio of 0.47 in the weekday PM peak hour and Saturday midday peak hour, respectively. As in the year 2025 background and total traffic conditions and year 2030 total traffic conditions, the critical westbound movement is projected to be under capacity and two-stage left-turn movements are provided. Therefore, no mitigation is recommended at this intersection.

Site Access A/Lincoln Road

The critical southbound left-turn movement is expected to operate at LOS E with a v/c ratio of 0.56 and LOS F with a v/c ratio of 0.70 in the weekday PM peak hour and Saturday midday peak hour, respectively. The heavy east-west through movement on Lincoln Road creates a higher delay for the southbound left-turns. However, this intersection is under capacity, two-stage left-turn movements are provided, and there are two other site accesses to enter or leave the site. Additionally, Site Access B is planned to include some level of mitigation that will benefit the operations at this location. Given these opportunities and conditions, no mitigation is recommended at this site access.

Site Access B/Teton Commercial Park/25th East

The critical eastbound and westbound movements are expected to operate at LOS F and overcapacity in both the weekday PM and Saturday midday peak hours. The same three potential mitigations from years 2020, 2025, and 2030 total traffic conditions were analyzed for this intersection: 1) restrict the access to a right-in/right-out/left-in access, 2) signalize the access, and 3) install a multilane roundabout.

Right-In/Right-Out/Left-In Access

The critical eastbound and westbound left-turn movement is removed from the intersection under this mitigation. The eastbound and westbound right-turn movements are projected to operate under capacity and at LOS D and C during the weekday PM and Saturday midday peak hours, respectively.

Traffic Signal

Installing a traffic signal at this site access improves operations for both developments. This access is projected to operate at LOS B in the weekday PM and Saturday midday peak hours with this mitigation.

Roundabout

Another possible mitigation would be to install a multilane roundabout at Site Access B. This access is projected to operate at LOS B and C in the weekday PM and Saturday midday peak hours, respectively with this mitigation.

Table 8 summarizes the operations for the site accesses and the Lincoln Road/25th East intersection under all three mitigation scenarios.

Table 8. Year 2030 (Costco + Teton Commercial Park) Mitigated Operational Results at Site Access B/25th East

Intersection	Right-In/Right-Out/Left-In		Traffic Signal		Roundabout	
	LOS	V/C*	LOS	V/C	LOS	V/C*
Year 2030 Weekday PM Peak Hour						
Site Access A/Lincoln Rd	E	0.52 (SBL)	E	0.56 (SBL)	E	0.56 (SBL)
Site Access B/25th East	C	0.52 (EBR)	B	0.86	B	0.69 (WB)
Site Access C/25th East	D	0.27 (EB)	D	0.18 (EB)	D	0.18 (EB)
Lincoln Rd/25th East	F	1.45 (NB)	F	1.27 (NB)	F	1.27 (NB)
Year 2030 Saturday Midday Peak Hour						
Site Access A/Lincoln Rd	F	0.65 (SBL)	F	0.70 (SBL)	F	0.70 (SBL)
Site Access B/25th East	D	0.73 (EBR)	B	0.86	C	0.83 (EB)
Site Access C/25th East	E	0.42 (EB)	D	0.27 (EB)	D	0.27 (EB)
Lincoln Rd/25th East	E	1.02 (SB)	D	0.87 (NB/SB)	D	0.87 (NB/SB)

* V/C is of the worst movement if listed in parenthesis

As shown in Table 8, all proposed mitigation options are projected to provide acceptable traffic operations at the Site Access B during the weekday PM and Saturday midday peak hours. With the increase in traffic volumes from the Teton Commercial Park, the intersection of Lincoln Road/25th East is

projected to operate at LOS F and over capacity during the weekday PM peak hour. As noted above in the mitigation section, this intersection would need additional mitigation with the development of Teton Commercial Park to bring the intersection operations to LOS D or better.

95th Percentile Queuing Analysis

Queuing results were reviewed for the study intersections under weekday PM and Saturday midday peak hours and were found to be acceptable. *Queuing worksheets are provided with the analysis worksheets in Appendix P.*

As highlighted in the introduction to this section, given the uncertainty of the uses for the Teton Commercial Park development and timeline for the uses to become operational on-site, it is recommended that this analysis scenario be used for planning purposes by the County, but not for identifying conditions of approval for the proposed Costco warehouse and fuel station and outparcel.

Section 6 Site Access Evaluation

SITE ACCESS EVALUATION

This section summarizes on-site circulation, sight distance, access spacing, turn lane requirements, and 95th percentile queuing associated with the proposed accesses on 25th East and Lincoln Road for the Costco warehouse and fuel station.

ON-SITE CIRCULATION

This section discusses the on-site circulation for vehicles, trucks, and pedestrians.

Vehicle Circulation

The site plan was reviewed with respect to the vehicular circulation and identified the following:

- Access is proposed via 25th East and Lincoln Road.
  - Site Access A serves the fuel station, southern parking area, and warehouse deliveries.
  - Site Access B serves as the primary access to the main parking area.
  - Site Access C serves the northern parking area and warehouse deliveries.
- On-site circulation between the Costco fuel station and parking areas for the warehouse are connected via several internal site roadways.
- The outparcel lot, located in the southeast quadrant of the site will be served via the internal site roadways. No direct access is planned on Lincoln Road for this lot.

Truck Circulation

The Costco warehouse and fuel station will receive deliveries from their Depot trucks, in this case from the Salt Lake City Depot, gas trucks, and local deliveries. Trucks using the dock area located in the northwest corner of the warehouse are planned to be routed mostly via Site Access C on 25th East and depart using either Site Access A on Lincoln Road or Site Access B on 25th East. Fuel trucks are planned to be routed mostly via Site Access A on Lincoln Road and depart via Site Access B on 25th East.

- The Costco warehouse has deliveries from approximately 10 to 14 trucks on average per day. This includes depot trucks, direct loads like water or dog food, and local vendors like the bread vendors.
- The Costco fuel station receives 2 to 3 deliveries per day on average. During busy holiday weeks, a 4th delivery is required during the day.

Based on this information, the proposed Costco warehouse and fuel station is estimated to receive 12 to 17 trucks on average per day ranging from local delivery to Depot trucks to gas trucks.

Pedestrian Circulation

Sidewalks and internal pedestrian walkways are provided on-site to connect the parking areas to entrance of the Costco warehouse. Additionally, an external pathway is planned along the 25th East site frontage and external, detached sidewalk is planned along the Lincoln Road site frontage to provide connectivity from the internal walkways to the external pathway and sidewalk network for the City and County.

SIGHT DISTANCE

Intersection sight distance was reviewed at the proposed access locations. Lincoln Road and 25th East are generally flat with minimal obstructions.

Lincoln Road / Site Access A

Site Access A is a proposed full movement access located on Lincoln Road approximately 610 feet west of 25th East. Looking to the east on Lincoln Road, there is over 1,000 feet of intersection sight distance and to the west, there is also over 1,000 feet of intersection sight distance. The location of the proposed access provides adequate sight distance to the east and west as both are greater than the 445 feet required by American Association of State Highway Transportation Officials (AASHTO) for the posted speed of 40 mph along Lincoln Road (Reference 8). Exhibit 1 provides the view of Lincoln Road to the east and west at the proposed location of Site Access A.

Looking east on Lincoln Road

Looking west of Lincoln Road

Exhibit 1. Sight Distance at the Proposed Lincoln Road / Site Access A

Site Access B / 25th East

Site Access B is a proposed full movement access located on 25th East approximately 660 feet north of Lincoln Road. Looking to the north on 25th East, there is over 1,000 feet of intersection sight distance and to the south, there is also over 1,000 feet of intersection sight distance. The location of the proposed access provides adequate sight distance to the north and south as both are above the 445 feet required

by AASHTO for the posted speed of 40 mph along 25th East. Exhibit 2 provides the view of 25th East to the north and south at the location of Site Access B.

Looking north on 25th East

Looking south on 25th East

Exhibit 2. Sight Distance at the Proposed Site Access B / 25th East

Site Access C / 25th East

Site Access C is a proposed full movement access located on 25th East approximately 1,275 feet north of Lincoln Road. Looking to the north on 25th East, there is over 1,000 feet of intersection sight distance and to the south, there is also over 1,000 feet of intersection sight distance. The location of the proposed access provides adequate sight distance to the north and south as both are above the 445 feet required by AASHTO for the posted speed of 40 mph along 25th East from the elevation at the edge of the existing pavement. Exhibit 3 provides the view of 25th East to the north and south of Site Access C.

Looking north on 25th East

Looking south on 25th East

Exhibit 3. Sight Distance at the Proposed Site Access C / 25th East

The following recommendations have been identified to ensure adequate safety and operations at the site access points:

- Remove miscellaneous vegetation and shrubbery, and potential obstructions along 25th East and Lincoln Road as necessary to obtain and maintain adequate intersection sight distance.
- Site accesses along 25th East and Lincoln Road should match the existing grade of the roadways and back at least one car length.

ACCESS SPACING, TURN LANE, & 95TH PERCENTILE QUEUING ANALYSIS

This section discusses the access spacing guidelines and turn lane analysis for 25th East and Lincoln Road.

Access Spacing

This section discusses the access spacing on 25th East and Lincoln Road based on BMPO standards. The BMPO access spacing standards are included in the BMPO *Access Management Plan* (Reference 5).

25th East

According to the BMPO *Access Management Plan*, 25th East is considered a principal arterial with shared priority. Site Access B is considered a major intersection as it is anticipated to serve more than 5,000 daily trips. Site Access C is considered a minor intersection. However, minor intersections use the same spacing guidelines as major intersections along principal arterials. For a principal arterial with shared priority, the major intersection spacing guideline is 660 feet.

Based on the proposed access locations for Site Access B (full movement) and Site Access C (full movement) shown in Figure 2, the BMPO spacing criteria is not met for Site Access B, but is met for Site Access C on 25th East. The minimum spacing distance is 660 feet while Site Access B is located approximately 590 feet from Lincoln Road. However, Site Access B functions as a "T" intersection and the location and orientation of the building to make the site function doesn't allow for the access to be moved any further north. As a full-movement, unsignalized driveway, Site Access B is projected to operate under capacity and at LOS E/F under year 2020 and 2025 conditions, and under capacity/over capacity and at LOS F under year 2030 conditions as a full-movement, unsignalized driveway with Costco in place. Therefore, the mitigation at this intersection can be delayed until after the opening of Costco when traffic volumes and adjacent site development conditions warrant a higher level traffic control. With any of the mitigation options, Site Access B is projected to operate at LOS D or better under all analysis scenarios and accommodate the 95th percentile queue lengths.

Based on this assessment, the 590 feet spacing provides adequate spacing to accommodate vehicle queues between Site Access B and Site Access C and between Site Access B and the multilane roundabout at the 25th East/Lincoln Road intersection. Therefore, it is recommended that both accesses be approved for construction at their proposed locations shown in Figure 2.

Lincoln Road

According to the BMPO Access Management Plan, Lincoln Road is considered a principal arterial with truck/auto priority. Site Access A is the only proposed driveway on Lincoln Road and is considered as a major intersection as it is anticipated to serve more than 5,000 daily trips. For a principal arterial with truck/auto priority, the major intersection spacing guideline is 660 feet.

Based on the proposed access location for Site Access A (full movement), shown in Figure 2, the BMPO spacing criteria is not met. The minimum spacing distance is 660 feet. Site Access A is located approximately 600 feet from the Lincoln Road/25th East intersection. However, this intersection generally functions as a "T" intersection with a separate right-turn and left-turn lanes. The access is located the farthest possible distance from the Lincoln Road/25th East intersection and is essential for site circulation with the Costco fuel station and for truck deliveries. This access helps distribute site trips from the two accesses on 25th East, is projected to operate at LOS E or better, and is under capacity during all analysis scenarios. Additionally, the proposed access location will remove an existing access that is located much closer to the Lincoln Road/25th East intersection, which is another benefit to allowing the location of Site Access A. Therefore, Site Access A is recommended as a full-movement, unsignalized driveway.

Turn Lane Analysis

Turn lane warrants for year 2020, 2025, and 2030 total traffic conditions were evaluated at all three site accesses using BMPO turn lane warrant worksheets. Table 9 shows the results of the turn lane evaluation. *Appendix R contains the turn lane warrant analysis worksheets.*

Table 9. Site Access Turn Lane Analysis Results

Intersection	Type	Turn Lane	Warranted in 2020?	Warranted in 2025?	Warranted in 2030?
Site Access A/Lincoln Road	Full movement	WB Right Turn Lane	Yes	Yes	Yes
Site Access B/25th East	Full movement	SB Right Turn Lane	Yes	Yes	Yes
Site Access C/25th East	Full movement	SB Right Turn Lane	No	No	No

As shown in Table 9, right-turn lanes are warranted at Site Access A and Site Access B. These turn lanes were assumed in the analysis in the report. Due to the site layout configuration, it is expected that Site Access A and Site Access B will act as the primary accesses for vehicles. Site Access C is only expected to have 31 and 44 vehicles turning into the access during the weekday PM and Saturday midday peak hours, respectively. Based on this assessment, a southbound right-turn lane is not recommended at Site Access C.

95th Percentile Queuing Analysis

A 95th percentile queuing analysis was performed for key turning movements at the study intersections and site access for all scenarios using Vistro. As shown in Table 10, there is adequate storage for the 95th percentile queuing under all analysis scenarios.

Table 10. 95th Percentile Queues at Critical Turn Lanes

Intersection	Movement	Available or Proposed Storage (ft)[1,2]	2020 Total Traffic Conditions		2025 Total Traffic Conditions		2030 Total Traffic Conditions	
			Total 95th Percentile Queue (Wkdy PM/Sat)	Storage is Adequate? (Wkdy PM/Sat)	Total 95th Percentile Queue (Wkdy PM/Sat)	Storage is Adequate? (Wkdy PM/Sat)	Total 95th Percentile Queue (Wkdy PM/Sat)	Storage is Adequate? (Wkdy PM/Sat)
Lincoln Road / Woodruff Avenue	NBL	100'/TWLTL	165'/85'	Yes/Yes	190'/110'	Yes/Yes	240'/140'	Yes/Yes
	SBL	300'/TWLTL	170'/65'	Yes/Yes	185'/80'	Yes/Yes	250'/100'	Yes/Yes
	EBL	85'/TWLTL	60'/25'	Yes/Yes	75'/25'	Yes/Yes	110'/25'	Yes/Yes
	EBR	250'	100' /35'	Yes/Yes	100'/35'	Yes/Yes	130'/45'	Yes/Yes
	WBL	100'/TWLTL	90'/40'	Yes/Yes	115'/50'	Yes/Yes	190'/60'	Yes/Yes
Lincoln Road / 25th East	NB	No Restriction	165'/75'	Yes/Yes	255'/95'	Yes/Yes	390'/120'	Yes/Yes
	SB	No Restriction	60'/85'	Yes/Yes	75'/110'	Yes/Yes	95'/150'	Yes/Yes
	EB	No Restriction	65'/35'	Yes/Yes	90'/50'	Yes/Yes	120'/50'	Yes/Yes
	WB	No Restriction	40'/40'	Yes/Yes	55'/50'	Yes/Yes	70'/65'	Yes/Yes
Iona Road / 25th East	NB	No Restriction	210'/95'	Yes/Yes	315'/115'	Yes/Yes	325'/150'	Yes/Yes
	NBR	No Restriction	20'/25'	Yes/Yes	25'/25'	Yes/Yes	25'/25'	Yes/Yes
	SB	No Restriction	85'/190'	Yes/Yes	105'/270'	Yes/Yes	110'/380'	Yes/Yes
	SBR	100'	0'/0'	Yes/Yes	0'/0'	Yes/Yes	0'/0'	Yes/Yes
	EB	No Restriction	130'/50'	Yes/Yes	190'/60'	Yes/Yes	30'/80'	Yes/Yes
	WB	No Restriction	65'/65'	Yes/Yes	90'/85'	Yes/Yes	25'/110'	Yes/Yes
14th North / 25th East	SBL	150' / TWLTL	25'/25'	Yes/Yes	25'/25'	Yes/Yes	25'/25'	Yes/Yes
	WB	No Restriction	60'/35'	Yes/Yes	90'/50'	Yes/Yes	130'/60'	Yes/Yes
Lincoln Road / Site Access A	SBL	100' Prop	50'/65'	Yes/Yes	55'/75'	Yes/Yes	65'/85'	Yes/Yes
	SBR	100' Prop	15'/25'	Yes/Yes	25'/25'	Yes/Yes	25'/25'	Yes/Yes
	EBL	100' / TWLTL	25'/25'	Yes/Yes	25'/25'	Yes/Yes	25'/25'	Yes/Yes
Site Access B / 25th East (Unsignalized)	NBL	200'/TWLTL	15'/25'	Yes/Yes	15'/30'	Yes/Yes	20'/30'	Yes/Yes
	EBL	200'+ Prop	85'/180'[3]	Yes/Yes	100'/210'[3]	Yes/Yes	115'/240'[3]	Yes/Yes
	EBR	150' Prop	20'/30'	Yes/Yes	25'/35'	Yes/Yes	25'/34'	Yes/Yes
Site Access B / 25th East (Right-In/Right-Out/Left-In)	NBL	200'/TWLTL	25'/25'	Yes/Yes	25'/30'	Yes/Yes	25'/30'	Yes/Yes
	EBR	200'+ Prop	75'/100'	Yes/Yes	75'/110'	Yes/Yes	85'/120'	Yes/Yes
Site Access B / 25th East (Traffic Signal)	NBL	200'/TWLTL	25'/25'	Yes/Yes	25'/25'	Yes/Yes	25'/25'	Yes/Yes
	SBR	170' Prop	25'/25'	Yes/Yes	25'/40'	Yes/Yes	25'/40'	Yes/Yes
	EBL	200'+ Prop	25'/25'	Yes/Yes	45'/65'	Yes/Yes	45'/70'	Yes/Yes
	EBR	150' Prop	25'/25'	Yes/Yes	40'/65'	Yes/Yes	45'/70'	Yes/Yes
Site Access B / 25th East (Roundabout)	NB	No Restriction	45'/40'	Yes/Yes	50'/40'	Yes/Yes	55'/50'	Yes/Yes
	SB	No Restriction	35'/50'	Yes/Yes	40'/55'	Yes/Yes	45'/65'	Yes/Yes
	EB	200'+ Prop	45'/75'	Yes/Yes	50'/85'	Yes/Yes	55'/95'	Yes/Yes
Site Access C / 25th East	NBL	200'/TWLTL	25'/25'	Yes/Yes	25'/25'	Yes/Yes	25'/25'	Yes/Yes
	EB	100' Prop	25'/25'	Yes/Yes	25'/25'	Yes/Yes	25'/25'	Yes/Yes

1. "XXX/TWLTL" indicates that storage is available beyond the striped turn lane in a two-way left-turn lane.
2. "Prop" indicates that storage is proposed as part of the site development.
3. If two vehicles are assumed for storage in the TWLTL, the 95th percentile vehicle queue for the eastbound left turn reduces to 175' or less during all of the time periods and analysis scenarios.

Section 7
Conclusions and Recommendations

CONCLUSIONS AND RECOMMENDATIONS

The results of this study indicate that the proposed Idaho Falls Costco can be constructed while maintaining acceptable traffic operations and safety at the study intersections, assuming the recommended mitigation measures are in place.

FINDINGS

Year 2019 Existing Conditions

- The study evaluated three off-site intersections during two time periods: weekday PM and Saturday midday peak hours.
- All study intersections were found to operate at acceptable operations during the weekday PM and Saturday midday peak hours.

Year 2020 Background Traffic Conditions

- Year 2020 background traffic volumes were forecasted using a 2% annual growth rate.
- All study intersections will continue to operate at acceptable operations during the year 2020 background traffic conditions (weekday PM and Saturday midday peak hours).

Proposed Development Plan

- Kittelson maintains a database of traffic data and travel characteristics for Costco Wholesale. This information was used to estimate the trip generation for Costco Wholesale during the weekday PM and Saturday midday peak hours.
    - The proposed Costco warehouse and fuel station and outparcel are estimated to generate 7,045 daily net new trips, 707 weekday PM peak hour net new trips, and 988 Saturday midday peak hour net new trips.
- The distribution pattern for site-generated trips was estimated based on Costco Wholesale's prediction of potential members in the area, a review of the proposed access locations and adjacent roadway system, existing traffic patterns, and insights from the City and County staff.
- The proposed development plan includes two access points on 25th East and one access point on Lincoln Road. For initial analysis purposes, these three access points were assumed to be unsignalized, full-movement accesses.

Year 2020 Total Traffic Conditions

- All study intersections will continue to operate at acceptable operations during the year 2020 total traffic conditions (weekday PM and Saturday midday peak hours), except for the following:
    - **Site Access B/25th East** – The critical eastbound left-turn movement is expected to operate at LOS E with a v/c ratio of 0.59 in the weekday PM peak hour and at LOS F with a v/c ratio of 0.88 in the Saturday midday peak hour. Although this intersection is not over capacity, it does not meet BMPO's standard of LOS D. As the main access into the site, three mitigations were analyzed for this intersection:
        - 1) restrict the access to a right-in/right-out/left-in access,
        - 2) signalize the access, and
        - 3) install a multilane roundabout at the access.

      Any of these mitigations are projected to operate acceptably during the weekday PM and Saturday midday peak hours.

        - This intersection meets the Manual on Traffic Control Devices (MUTCD) eight-hour, four-hour, and peak-hour signal warrants based on 2019 daily traffic volumes and estimated site-generated trips for Costco at this proposed access.

Year 2025 Background Traffic Conditions

- Year 2025 background traffic volumes were forecasted using a 2% annual growth.
- All study intersections are projected to operate at acceptable operations during the year 2025 background traffic conditions, except for the following:
    - **14th North/25th East** – The critical westbound movement is expected to operate at LOS E with a v/c ratio of 0.40 in the weekday PM peak hour. The LOS does not meet BMPO's standard of LOS D. However, this critical movement is projected to operate under capacity and able to utilize the existing two-way, left-turn lane to facilitate the left-turn movement. Given the low volume on 14th North, the under-capacity condition, the presence of a two-way, left-turn lane, and that this intersection does not meet signal warrants, no mitigation is required at this intersection.

Year 2025 Total Traffic Conditions

- All study intersections are projected to operate at acceptable LOS during the year 2025 total traffic conditions, except for the following:
    - **14th North/25th East** – No mitigation is required at this intersection, similar to the findings under year 2025 background traffic conditions.

- **Site Access B/25th East** – The findings are the same as 2020 total traffic conditions.

Year 2030 Total Traffic Conditions – Costco Only

- All study intersections are projected to operate at acceptable LOS during the year 2030 total traffic conditions, except for the following:
  - **14th North/25th East** – No mitigation is required at this intersection, similar to the findings under year 2025 background and 2025 total traffic conditions.
  - **Site Access A/25th East** – The critical southbound left-turn movement is expected to operate at LOS E with a v/c ratio of 0.49 and LOS E with a v/c ratio of 0.58 in the weekday PM peak hour and Saturday midday peak hour, respectively. The heavy east-west through movement on Lincoln Road creates a higher delay for the southbound left-turns. However, no mitigation is recommended at this site access due to the following: this intersection is projected to be under capacity, there is a two-way, left-turn lane to facilitate southbound left turns, and the other two site accesses provide other options to enter or leave the site. Given these opportunities, no mitigation is required at this site access.
  - **Site Access B/25th East** – The findings are the same as 2020 and 2025 total traffic conditions.

Year 2030 Total Traffic Conditions – With Costco + Teton Commercial Park

- Per the County's request, an analysis scenario was requested that evaluated the traffic conditions with potential trips from the Teton Commercial Park (a 58-acre commercial development to the east of the Costco site). Specific uses within the site have not yet been determined and a transportation impact study has not been completed for the project. **Given the uncertainty of the uses for this development and timeline for the uses to become operational on-site, it is recommended that this analysis scenario and findings presented below be used for planning purposes by the County and not for identifying conditions of approval for the proposed Costco warehouse and fuel station and outparcel.**
- The Teton Commercial Park is proposed to be developed on the northeast corner of the Lincoln Road/25th East intersection. Access is planned via two access points on 25th East: 1) one access located approximately 660 feet north of Lincoln Road (this access is anticipated to align with Site Access B for Costco and with the proposed site plan would be located approximately 600 feet north of Lincoln Road), 2) second access at approximately 1,700 feet north of Lincoln Road, and 3) one access point on Lincoln Road. A 200,000 square-foot shopping center was assumed for the Teton Commercial Park in the year 2030.
- All study intersections are projected to operate at acceptable LOS during the year 2030 total traffic conditions (Costco + Teton Commercial Park), except for the following:

- **Woodruff Avenue/Lincoln Road** – This intersection is projected to operate at LOS E with a v/c ratio of 0.98 in the weekday PM peak hour with the traffic from both Costco and the proposed Teton Commercial Park. To mitigate this intersection, an additional northbound through lane (combined with the right-turn lane) is needed to bring the intersection operations to LOS D or better.
- **Lincoln Road/25th East** – This intersection is projected to operate at LOS F and LOS E in the weekday PM and Saturday midday peak hours, respectively. To mitigate this intersection, a separate northbound right-turn lane is needed to bring the intersection operations to LOS E, and separate northbound left-turn and right-turn lanes are needed to bring the intersection operations to LOS D or better.
- **Iona Road/25th East** – This intersection is project to operate at LOS F in both the weekday PM and Saturday midday peak hours. To mitigate this intersection, two circulatory northbound and southbound lanes are needed to bring the intersection operations to LOS D or better.
- **14th North/25th East** – No mitigation is required at this intersection, similar to the findings under year 2025 background and 2025 and 2030 total traffic conditions.
- **Site Access A/25th East** – The finding is the same as 2030 total traffic conditions with Costco only.
- **Site Access B/25th East** – The findings are the same as 2020, 2025, and 2030 total traffic conditions, but includes adding the east approach (4th leg) to the intersection to serve the future Teton Commercial Park. The right-in/right-out/left-in access, traffic signal, and multilane roundabout mitigation options provide acceptable traffic operations at Site Access B with the addition of site-generated trips from the future Teton Commercial Park.

On-Site Circulation/Site-Access Operations

- The proposed Costco warehouse and fuel station is estimated to receive 12 to 17 trucks on average per day ranging from local delivery trucks to Depot trucks to gas trucks.
- Sight distance (from field visit) is anticipated to be adequate at all site accesses on 25th East and Lincoln Road.
- **Site Access A/Lincoln Road (full movement)**
  - This driveway is located approximately 600 feet from the Lincoln Road/25th East intersection, which is the farthest possible distance on the site property. The access spacing does not meet BMPO access spacing guidance for a principal arterial. Per the traffic analysis, this access is projected to operate under capacity and at LOS D under year 2020 and 2025 total traffic conditions and LOS E under 2030 total traffic conditions. This access is critical for on-site circulation and for distributing trips between Lincoln Road and 25th East. With the proposed mitigation at Site Access B, it

is anticipated that Site Access A will function acceptably as a full-movement, unsignalized driveway.

- A westbound right-turn lane is warranted at the Site Access A/Lincoln Road intersection per the BMPO's right-turn lane warrants.
- All 95th percentile queues are accommodated within the proposed storage lengths at Site Access A.

- **Site Access B/25th East (full movement)**
  - This driveway is located approximately 590 feet to the north of the Lincoln Road/25th East intersection. The access spacing does not meet BMPO access spacing guidance for a principal arterial. However, Site Access B functions as a "T" intersection and the location and orientation of the building to make the site function doesn't allow for the access to be moved any further north. Per the traffic analysis, this access is projected to operate under capacity and at LOS E/F under year 2020 and 2025 conditions, and under capacity/over capacity and at LOS F under year 2030 conditions as a full-movement, unsignalized driveway with Costco in place. Therefore, this intersection requires one of the mitigations listed below to bring the access to an acceptable LOS:
    - 1) restrict the access to a right-in/right-out/left-in access,
    - 2) signalize the access, or
    - 3) install a multilane roundabout.
  - If the access is restricted to a right-in/right-out/left-in access or signalized, a southbound right-turn lane is warranted at the Site Access B/25th East per the BMPO's right-turn lane warrants.
  - All 95th percentile queues are accommodated within the proposed storage lengths at Site Access B.

- **Site Access C/25th (full movement)**
  - This driveway is located approximately 1,290 feet and 700 feet to the north of the Lincoln Road/25th East intersection and Site Access B/25th East. Per the traffic analysis, this access is projected to operate under capacity and meet LOS standards with Costco in place. This access is critical for on-site circulation to and from 25th East and for truck circulation. Site Access C will function acceptably as a full-movement, unsignalized driveway.
  - A southbound right-turn lane is not warranted at the Site Access C/Lincoln Road per the BMPO's right-turn lane warrants.
  - All 95th percentile queues are accommodated within the proposed storage lengths at Site Access C.

RECOMMENDATIONS

The following list provides a summary of the mitigation measures recommended as part of the proposed Costco warehouse and fuel station:

Off-Site Intersections

- No improvements are recommended at the off-site intersections as part of the Costco warehouse and fuel station development.

Site Access Intersections

- **Site Access A/Lincoln Road** - Construct a full-movement, unsignalized access at Site Access A on Lincoln Road that includes one ingress lane, two egress lanes (southbound left-turn and right-turn lanes), and a westbound right-turn lane.
- **Site Access B/25th East** - Construct a full-movement, unsignalized access at Site Access B on 25th East that includes one ingress lane, two egress lanes (eastbound left-turn and right-turn lanes), and a southbound right-turn lane at the opening of Costco, plan for a future multilane roundabout at this driveway by reserving the space needed for a multilane roundabout design, and participate in a cost-sharing of the roundabout. The multilane roundabout would be installed at a future date when deemed necessary by traffic volumes, traffic operations at this driveway, and development of the property to the east.
- **Site Access C/25th East -** Construct a full-movement, unsignalized access at Site Access C on 25th East that includes one ingress lane and one egress lane (shared westbound left-turn and right-turn lane).
- Maintain adequate sight distance at Site Access A, B, and C by limiting the shrubbery and landscaping.

Section 8 References

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